THE SCHOOL PRINTSHOP

STILWELL

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By

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THE PREFACE

The School Printshop had its inception in the classroom. It is the outgrowth of teaching classes of elementary-school pupils, high-school pupils, after-school volunteer pupils among whom the work was more or less of a vocational nature, and college students who were fitting themselves to teach printing. It is designed primarily for these groups of students—a book to be owned by the pupil and to be used by him as a shop manual. There is need for a book to supplement the oral instruction, one to which the pupil can refer as questions arise and problems confront him. It is not expected that this book will take the place of the teacher, although a pupil can make progress with no other than printed instruction.

Not everything pertaining to the broad subject of printing, nor indeed to any one branch of it, can or should be taught outside of a commercial printshop or a highly specialized school of printing. It is necessary then to select the printshop material that is suitable for teaching purposes in schools. In making such a selection for this manual I have included only topics essential to a proper understanding by the pupil and basic to the subject of printing. I have attempted to give in simple form, with no confusing details, directions for setting type and printing, so that the pupil can successfully and safely carry on all the operations involved in a manner consistent

with the best traditions of the craft. By directing the pupil's attention to the history of printing, to its art possibilities, to the interesting relations that exist between printing and its allied industries, I have aimed to broaden the student's outlook and to place printing where I believe it belongs as a cultural study in the school curriculum.

No attempt has been made to present a series of lessons in regular order. Rather the matter and method of the book are to be regarded as suggestive, as material which each teacher can adapt to his own working conditions. In a general way the order of the chapters follows the logical development of the subject, but always the time and manner of teaching any part of it are conditioned by the pupils.

The pupil should be so trained in the use of the book that he can readily find any needed information or instruction. The printing processes are so interrelated that no one of them can be fully explained without a reference to some other. Hence no one chapter contains all the information about the topic it deals with, nor can the pupil fully understand or remember it all without the additional experience he must gain through the work described in other chapters. Thus he must refer time and again to the different chapters. Some chapters are to be used only for purposes of reference. The pupil will read such chapters, the teacher illustrating and amplifying wherever the pupil requires it. Since it is desirable to get the pupil to work as quickly as possible, chapter ii is suggested as the point of departure. Because from the start both hand and brain are employed, the pupil is interested

throughout the usually stupid preliminary process of learning the case. Definitions bore the child if an attempt is made to teach them before he feels the need of them. For that reason in this book terms needing defining have been placed in a glossary.

The Appendix has been prepared with the intent of aiding both the trained printer who has been called upon to teach before he has solved the problems of pedagogy and the trained teacher who is attempting to teach a new, untried subject. Perhaps no question is more frequently asked than, "What comprises a suitable equipment for a school and what is its cost?" The announcements sent out by dealers in printshop supplies are often misleading, ranging from "a school printing outfit for $195" to "an equipment that can be purchased for $1,000." These indicate to the inexperienced teacher only a money difference. The list of required articles in the Appendix should help to make clear such notices, as it states the quantity required in terms of the number of pupils, a definite quantity for each pupil or for each group of ten pupils.

The course of study for the Elementary and High Schools of the School of Education of the University of Chicago has for two years been used in its present form. A good course of study is a growing one; this one is offered as a working hypothesis. Experience and study will enable the thoughtful teacher to suggest many changes and improvements.

It is a pleasure to acknowledge indebtedness to many friends and colleagues for encouragement and help. Thanks are due to Mr. F. K. Phillips

of the Educational Department of the American Type Founders Company for reading the manuscript; to Mr. Walter Sargent of the School of Education, the University of Chicago, to Miss Rachel Whittier of the Boston Normal Art School, and to Miss Louise Clark of Boston, Massachusetts, for practical art suggestions; to the late Mr. William M. Shirley of the Shirley Press, who in early days gave generous assistance when assistance was most needed; to the various manufacturing firms for pictures and printshop machinery.

I take this opportunity to express an appreciation of the attitude of the master printers toward school printing. Their generous recognition and friendly spirit go far toward connecting the work of the school with that of the trade and make easy the passage from one to the other.

KATHARINE M. STILWELL

THE INTRODUCTION

Among the manual arts there is none which is more appropriate to the elementary school than printing. The pupil is introduced in the first grade to books, and all through his school life he is what the economists call a "consumer" of printing. He is influenced, without knowing the reasons why, by the artistic arrangement of the pages of his books and by the perfection of presswork and binding. He reads easily when the printing is well done.

As he uses books his curiosity is sure to be aroused about the way in which they are made. This curiosity will be increased by references in his school work to the great changes which came in civilization with the invention of printing. To deprive the pupil of information about the making of books would be to cut him off from one of the most interesting lessons which the school can teach.

Adequate knowledge about printing cannot be drawn from mere description. It follows, therefore, as an easy deduction from what has been said, that the pupil should be allowed to become in a small way a producer of printing in order that he may be an intelligent and satisfied consumer.

There are many incidental advantages. As the pupil tries to set up an artistic form he will learn the distinction between well-arranged printing and careless work. As he studies different

kinds of types he will discover the reasons for many of the variations which he has seen but has not noticed. He will also find that he needs to master the mechanics of spelling and punctuation. These lessons are worth learning, and they will be much more vividly apprehended by a producer than by a mere consumer.

The equipment of a printshop has certain advantages over other equipments for manual work. It can be used by many pupils many times over. It puts out a product which is intrinsically useful.

Above all, the pupils are very enthusiastic about this kind of work. They need no artificial stimulus to insure eager attention. The work is itself exacting, and its relation to all the other activities of the school prevents distraction.

Evidently the problem of teaching printing is no narrow problem nor one relating merely to preparation for a trade. It is a virtue of such a text as this that it conceives the problem of the school printshop in terms broader than the trade and yet detailed enough to satisfy even the technical printer.

The use of this material in the University Elementary School has been an unqualified success. That the author of the text has put her experience and her skill at the service of a larger group of teachers and pupils is a matter of satisfaction to all her colleagues.

CHARLES H. JUDD

Printing is preëminently the art of democracy.

—HENRY TURNER BAILEY

A class at work

THE SCHOOL PRINTSHOP

CHAPTER I

A DESCRIPTION OF TYPE

Type consists of small pieces of metal with a letter or character cast in relief on one end, which is called the **face.** This name is sometimes confusing to beginners because, in printing, the word "face" is also used to distinguish one style of type from another.

The end of the metal opposite the face is usually grooved by the machine in casting. This makes two projections called the **feet.** The term is applied to the end opposite the face even when the groove is omitted. (Fig. 1 shows parts of type.)

Body is that part of the type between the face and the feet. It is sometimes called the **shank.** Body also means sizes or depths of type.

On the front of the body near the feet are one or more shallow grooves called **nicks,** which are to guide the compositor. Were there no nicks, he would have to examine the face of each piece of type before setting it in the stick to make sure that letters were right side up. In some cases certain letters have an additional nick to distinguish them from others in the same case for

which they might be mistaken. For example, in the 12-point Lining Caslon No. 540 the small capitals o, s, v, w, x, and z have three nicks to distinguish them from the same letters lower case, which have the ordinary two nicks of the font. The nicks also serve to prevent the mixing of different faces of the same body, as the type founders vary the number and position of nicks in the different faces.

As there must be space between the letters of a printed word, a slight margin is left about the letter on the metal. The margin between the bottom of a letter and the outer edge of the body is usually called the **shoulder.** The slope between the face and the upper surface of the body is called the **beard** or **neck.**

The different parts of the surface of the letter are named. The **stem,** or **body-mark,** is the thick line of the face of the letter. Printers call it the **thick-stroke.** The fine, cross line put in as a finish to unconnected lines is called a **serif.** The fine **hair line** connects the stem or body-marks. Some letters, for example, *f* and *j*, sometimes project over the side of the body. This projection is called a **kern,** and such letters are spoken of as **kerned** letters. The depression between the lines of a face is called the **counter.** The **pin-mark** is a small circle indented in the side of the body near the face. It is made by a

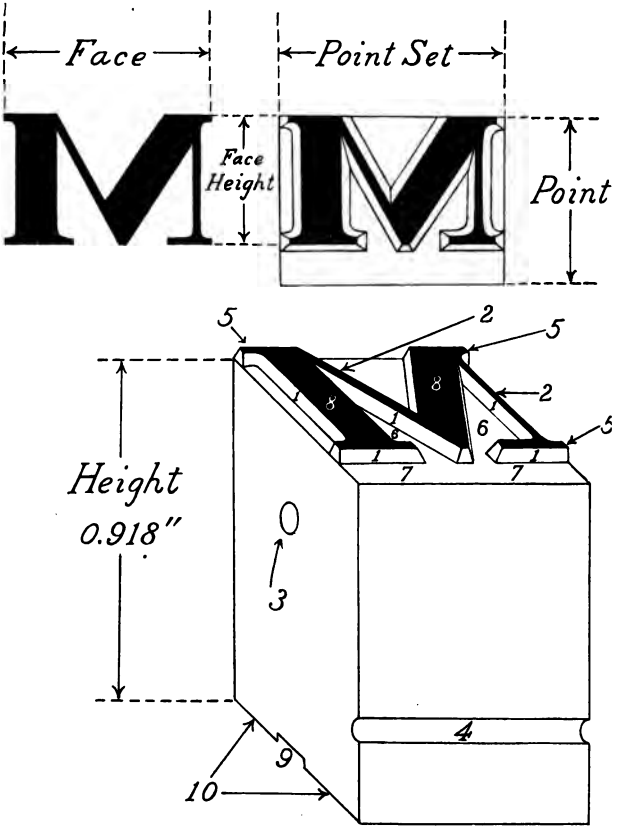


FIG. 1. *Showing the various parts of a piece of type*

1. Neck or beard
2. Hair line
3. Pin-mark
4. Nick
5. Serif
6. Counter
7. Shoulder
8. Stem
9. Groove
10. Feet

pin in the mold during casting and is used for the purpose of designating the foundry at which it was cast.

The standard height of type in this country is 0.918 inch. Type of this measurement from face to feet is **type-high.** Type cast higher or lower is **high-to-paper** or **low-to-paper.**

Type is uniform in height, but varies in depth and width. The body measurement of a piece of type is the depth of the end of the metal on which the type face appears. It includes not

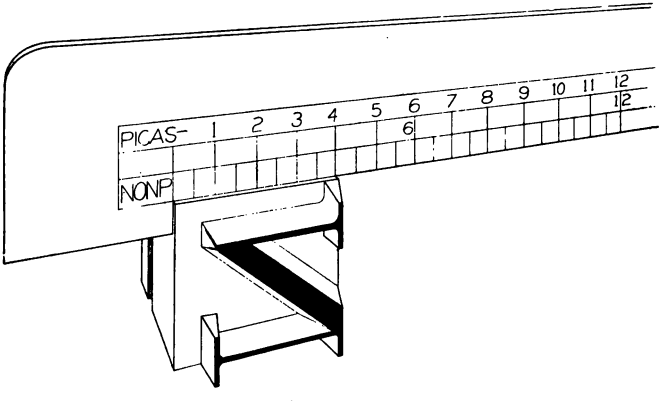


FIG. 2. *Method of measuring a piece of type on a pica rule*

only that part of the type which makes the impression, but also the open spaces at the top and bottom of the letter (Fig. 2).

The width of the letters in a font varies from the wide *m* to the narrow *i*. The fonts themselves

vary from "expanded," which magnifies the width, to "condensed," which minimizes it. The position of the letter on the body of the type also affects its width. Only full-bodied letters occupy the entire body of the type. The ascending letters occupy the upper three-fourths of the body, the descending letters the lower three-fourths, while short letters like *a* and *e* occupy about one-half of the body and are set in the middle part. Each letter needs space about it to make it legible, and this surrounding space should be uniform. If this space is small, the letters are near together and the type is consequently said to be **close-fitted;** on the other hand, if the space is wide, the type is **wide-fitted.**

Formerly body size of type was designated by name. At that time there was not a uniform standard of type sizes, and type cast by one foundry was not always of the exact size of type bearing the same name but cast by another foundry. This disparity made difficult the using together of type cast by different foundries. To obviate this, the type founders of America adopted what is known as the American Point System of measuring type. They selected as the standard the **pica,** about one-sixth of an inch, or, to be exact, 0.1666044 inch, in length. They divided this into twelve equal parts called **points.** All bodies of type are now made on multiples of

this point and are called by numerical names: 6-point, 8-point, 10-point, 12-point, and so on. One-point is exactly 0.013837 inch, or, for practical purposes, 1/72 of an inch (Fig. 3). Type of 72 points, then, is about one inch in depth.

FIG. 3. *Showing increase in thickness, by points, from one to twelve*

Type from 3-point to 84-point, and sometimes as large as 144-point, is cast in metal, but large sizes are commonly made of wood. Wood type is lighter and cheaper than metal type and is used for printing bills for posting, where large sizes are required. This kind of type is made of maple, box, pear, or other close-grained woods.

The following table gives the sizes of type with their numerical names and their former names:

Numerical Name	Former Name
60-point	Five-line pica
48-point	Canon, or four-line pica
44-point	Meridian
40-point	Double paragon
36-point	Double great primer
32-point	Four-line brevier
30-point	Five-line nonpareil
28-point	Double English
24-point	Double pica

Numerical Name	Former Name
20-point	Paragon
18-point	Great primer
16-point	Columbian
14-point	English
12-point	Pica
11-point	Small pica
10-point	Long primer
9-point	Bourgeois
8-point	Brevier
7-point	Minion
6-point	Nonpareil
5½-point	Agate
5-point	Pearl
4½-point	Diamond
4-point	Brilliant
3-point	Excelsior

An assortment of one kind and size of type used together is called a **font.** The font is based upon an estimate of the number required of each letter in the language and is sold entirely by weight or in job fonts. An ordinary font of roman type contains the capitals, the small capitals, and the lower-case letters. Included in these are the usual **ligatures** (Æ, Œ, æ, œ, ffl, ffi, ff, fl, fi), punctuation marks, figures, dashes, braces, reference marks, and spaces. Every roman face has its corresponding italic (capitals and lower case). This makes five series in every complete font, thus enabling the printer to do many kinds of work with one size and style of type.

The bodies of type are described by numbers but the style of the face is designated by name. Unless otherwise stated, roman face is always understood. For example, 18-point Cheltenham means: *body-size*, 18-point; *face*, roman; *style*, Cheltenham.

The specimen books of the great type foundries contain many styles of type faces grouped into families. Type faces are constantly improving, and printers now are using fewer styles, but of better design, than was the case a few years ago.

The most common groups of type faces used in this country are roman, italic, text, and gothic.

This line is set in roman type.

This line is set in italic type.

This line is set in text, or black-letter, type.

This line is set in gothic type.

The roman type is that style which was based on the old Roman manuscript. It was first used by Sweynheim and Pannartz at Subiaco, Italy. It has served as a model for the others. It is the simplest and best form of type for ordinary books and newspapers. Under the general name of roman may be grouped Caslon, Cheltenham, Century, Della Robbia, Pabst, Goudy Old Style, and many others in common use. Not all forms of roman type are suitable for book printing.

SPECIMENS OF TYPE SIZES

CASLON

FOURTEEN POINT

THE SCHOOL PRINTSHOP 789

EIGHTEEN POINT

THE SCHOOL PRI 74123

TWENTY-FOUR POINT

THE SCHOOL 6597

THIRTY POINT,

THE SCHO 091

THIRTY-SIX POINT

THE SCH 26

FORTY-TWO POINT

THE S 130

FORTY-EIGHT POINT

THE 1290

Certain families through their use as such have come to be classed as ornamental job type. Such, for example, are the Della Robbia and the Pabst.

The italic is a slanting letter, also originating in Italy, used as a companion type to the roman letter.

Text is modeled after the hand used in the manuscripts before the invention of printing. It derived the name of text from the fact that the early printers used it for the text or solid part of the page. Printers call it **black-letter** because it shows more black than white upon the printed page. Bibliographers speak of it as gothic simply because it has been favored by people of Gothic descent. In its early use the pointed letter was the formal and accepted style for books of devotion. It retains this use today. It appears in the type books under several families with slightly different characteristics. Some of the common names are Old English, Flemish, and Cloister Black. German type is a black-letter type.

The style of type known as gothic is not Gothic at all. It also is an imitation of Roman writing. It is a black-letter type made of even strokes with no serifs.

In the selection of a type face legibility is the first consideration. To secure this, the type design must be simple in form, with a pure line

unhampered by useless and meaningless turns. It must combine well with other letters to form words. Each letter and figure should be distinct so that one cannot be mistaken for another. The line should be firm and bold; strong enough to have character; not so fine as to produce a weak tone on the printed page. Type with hair lines should be avoided; nor should type so condensed as to require over-much spacing be chosen. The type of today must be adapted for use in printing by a power press on soft paper.

CHAPTER II

LEARNING THE CASE

Formerly in the printshop type was kept in what are called **news cases**—that is, a pair of cases, upper and lower, so designated from their position on the **case stand,** a light, wooden frame made to support them. The top of the stand is so arranged that it holds the two cases at different angles. This is for the purpose of enabling the compositor to see and reach all the type in each case.

News cases are divided into compartments or boxes so that there is a box for each character in the font of type. The upper case contains on the right the capitals (called **caps**) and on the left the small capitals (called **small caps**). The remaining boxes contain the fractions, signs, diphthongs, and other characters used in printing. The upper case is divided into ninety-eight boxes of uniform size. In the lower case are the small letters, the digits, the ligatures, the punctuation marks, the spaces, and the quadrats, commonly called quads. The lower case consists of fifty-four rectangular compartments of unequal size.

The larger boxes are designed to hold the letters most frequently used, while the smaller boxes contain those less frequently used and therefore fewer in number.

The easiest way to learn the case is by paper folding. Fold a piece of paper eight by four into thirty-two squares. (See Fig. 4.)

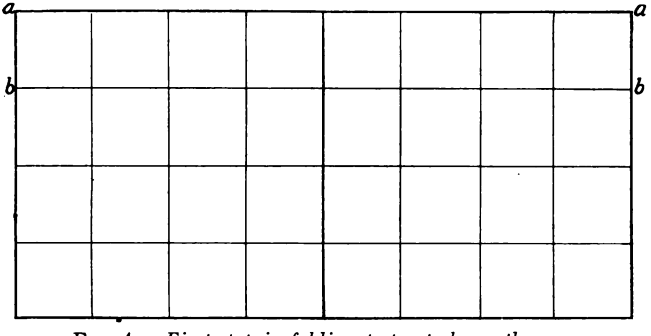


FIG. 4. *First step in folding paper to learn the case*

Now fold the upper edge *aa* to meet the first crease *bb*, crease, and tear off, thus leaving the rectangle eight by three and one-half. With a pencil trace the lines as indicated in Fig. 5, on the opposite page.

Next add the lines as shown in Fig. 6, and you have a drawing of the lower case. From Fig. 7, on page 15, you can readily learn the location of the small letters, the digits, the ligatures (*fi*, *ff*, *ffi*, *fl*), the punctuation marks, the spaces, and the quads.

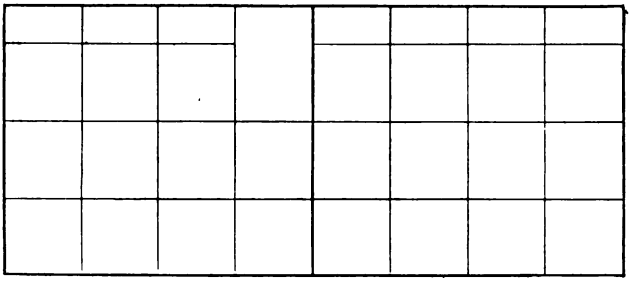


FIG. 5. *Second step in learning the case*

With ruler and cardboard draw Fig. 6 to any scale desired, and as you learn the case complete the diagram to the stage shown in Fig. 7, on page 15.

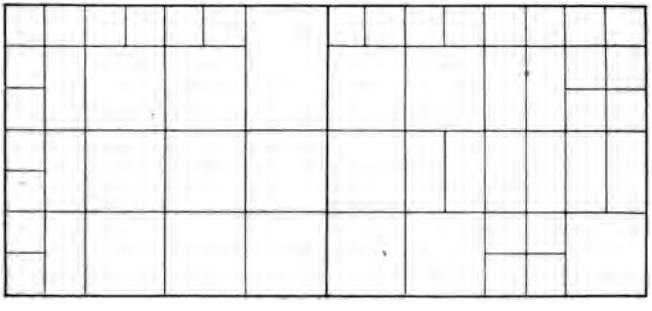


FIG. 6. *Diagram of the lower case*

Commercial shops are now discarding the open-case stands in favor of closed cabinets; news cases are therefore falling into disuse. The case stand is made for men; the upper case is therefore too

<table>
<tr><td>ffi</td><td>fl</td><td>5 em</td><td>4 em</td><td>:</td><td>k</td><td rowspan="2">e</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr>
<tr><td>j</td><td rowspan="2">b</td><td colspan="2" rowspan="2">c</td><td colspan="2" rowspan="2">d</td><td colspan="2" rowspan="2">i</td><td colspan="2" rowspan="2">s</td><td rowspan="2">f</td><td rowspan="2">g</td><td>ff</td><td>9</td></tr>
<tr><td>?</td><td>fi</td><td>0</td></tr>
<tr><td>!</td><td rowspan="2">l</td><td colspan="2" rowspan="2">m</td><td colspan="2" rowspan="2">n</td><td rowspan="2">h</td><td colspan="2" rowspan="2">o</td><td>y</td><td>p</td><td>w</td><td>;</td><td rowspan="2">En quads</td><td rowspan="2">Em quads</td></tr>
<tr><td>z</td><td>x</td><td rowspan="2">v</td><td colspan="2" rowspan="2">u</td><td colspan="2" rowspan="2">t</td><td rowspan="2">3 em space</td><td colspan="2" rowspan="2">a</td><td colspan="2" rowspan="2">r</td><td>;</td><td>:</td><td colspan="2" rowspan="2">Quads</td></tr>
<tr><td>q</td><td>.</td><td>-</td></tr>
</table>

FIG. 7. *Diagram of lower case showing positions of letters and characters*

ffi	fl	5 em	4 em	‚	k	e	1	2	3	4	5	6	7	8	$	£	K	Æ	Œ	æ	œ
j	b	c		d			i		s		f	g	ff	9	A	B	C	D	E	F	G
?													fi	0							
!	l	m		n		h	o		y	p	w	;	En quads	Em quads	H	I	K	L	M	N	O
z															P	Q	R	S	T	V	W
x	v	u		t		3 em space	a		r		;	:	Quads		X	Y	Z	J	U	&	fll
q											.	-									

FIG. 8. *California job case*

high for schoolroom use. Instead of the news cases most school shops now use the California job case. Its size is that of the lower case, but one-third of the space is divided into thirty-five compartments for the capitals and sorts, while the remaining two-thirds has fifty-four smaller boxes which hold the letters and other characters, placed as in the ordinary lower case (see Fig. 8 on the preceding page).

The California job case can readily be learned by paper folding as for the simple lower case. Use paper eight by four. After folding it into three vertical rectangles, tear off the right-hand one, and then proceed as indicated in the directions for the lower news case, which are given on page 13.

The Yankee job case is used in many closed cabinets. The case is made five and one-half by eight instead of three and one-half by eight, and the additional space is divided into two rows of sixteen boxes each for the capital letters. This case differs from the other cases not only in having the capital letters on its long side, but also in the order in which the capital letters are laid in the case (see Fig. 9 on page 18). The lower-case letters are laid as they are in the news and in the California job cases (see Figs. 7 and 8).

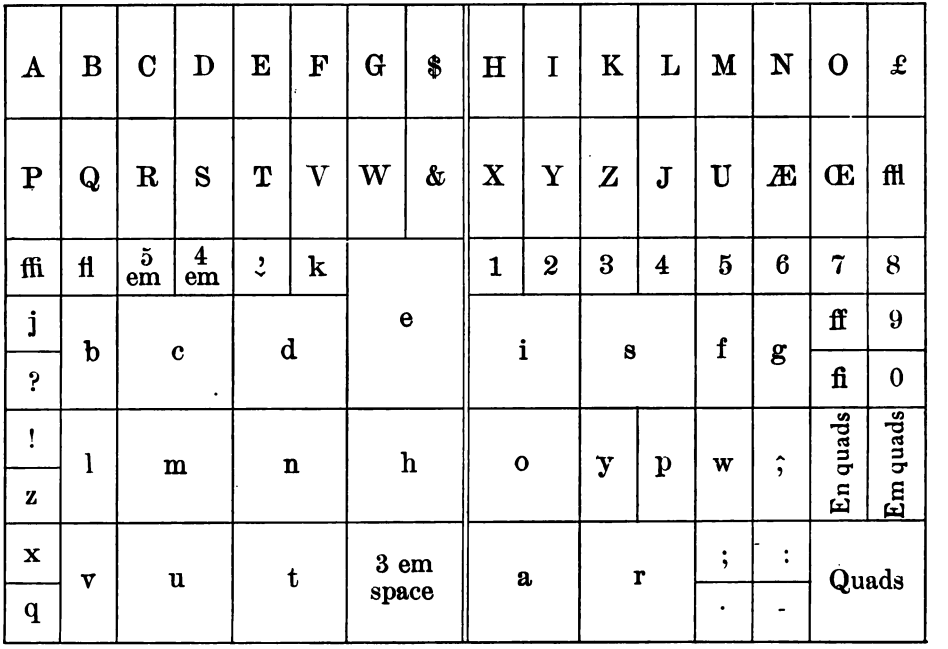


FIG. 9. *Yankee job case*

The most interesting way to learn the arrangement of the case is to set up the type in each box. Adjust your stick[1] to any desired measure. Hold it in your left hand at such an angle that the type will not fall out (Fig. 10). With your right hand pick up a piece of type and place it in the stick on its feet with the nick up. Use your left thumb to

FIG. 10. *Showing correct method of holding stick*

hold it in position until the next piece of type is put into the stick. When you have an entire line of type, hold it up before your eyes and read it. *Be sure the nicks are up.* Set lines of one letter until you can readily recognize that letter upside down. Then mark that letter in its compartment on your diagram and set up the letters in another box. Proceed in this manner until you know the entire

[1] See direction No. 2, page 33.

*	†	‡	§	‖	¶	☞	℔	₰	@	%	%	/	°
¼	½	¾	⅛	⅜	⅝	⅞	$	£	2 em	3 em	⌐	⌐	¬
⅓	⅔	&	Æ	Œ	æ	œ	—	-	2 em	3 em		Æ	Œ
A	B	C	D	E	F	G	A	B	C	D	E	F	G
H	I	K	L	M	N	O	H	I	K	L	M	N	O
P	Q	R	S	T	V	W	P	Q	R	S	T	V	W
X	Y	Z	J	U	]	)	X	Y	Z	J	U	&	ffl

FIG. 11. *Diagram of upper case showing position of letters and characters*

case and can recognize every letter and punctuation mark *upside down*.[1]

The upper case can be learned very quickly, as the capital letters are in regular alphabetical order, with the exception of *J* and *U*, which were not a part of the alphabet when the case was planned. The Romans used *I* and *V* as both consonants and vowels. Later, when *J* came to be used for consonantal *I*, and *U* for vowel *V*, these letters were placed in the case in boxes following *Z*. The three upper rows of the upper case contain the diphthongs, fractions, dashes, braces, and various reference marks which young printers seldom require. Not all school printshops have a complete assortment of the type that is kept in these boxes, but in those shops that have them it is of advantage to the pupils to know where they belong. Fig. 11 shows a diagram of the upper case.

[1] *To the Teacher*: See that each pupil learns in the beginning to hold his stick correctly in his left hand. This direction may be helpful: With the stick held in the right hand place the left thumb in the corner made by the knee and the bottom of the stick. Without moving the thumb, clasp the fingers around the bottom of the stick and release the right hand. This applies to the left-handed as well as to the right-handed child. Teach him to pick up the type with his right hand and to put it in the stick with the most direct movement. Whether he grasps it between the thumb and the forefinger with the nick up, or whether he turns the type over, depends upon the position it occupies in the box. The important thing is a steady, economical movement. This is the time to form correct habits of handling type. Have the pupil take a good position at a stand of the proper height and do not permit him to slouch at the case.

CHAPTER III

SPACING

Great care must be exercised in composition in the matter of spacing. Not only the spacing between the words, but the leading between the lines, the indention of the lines, and, in some cases, the spacing between the letters of a word influence the final appearance of a page of print.

Spaces are shorter than type, being made about four-fifths the height of the type, and of various thicknesses. **Quads** are large blanks used to fill out lines of paragraphs or of poetry, or other uncompleted lines. An **em quad** is a square of type-body of any size (Fig. 12). In 10-point type it is 10 points square; in 14-point it is 14 points square. An **en quad** is half the size of the em. The **two-em quad** is twice as long as it is thick. The **three-em quad** is three times as long as it is thick. A

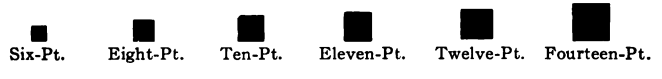


FIG. 12. *Exact sizes of em quads*

three-to-em space[1] (frequently called a **thick space**) is one-third of the em; a **four-to-em** space

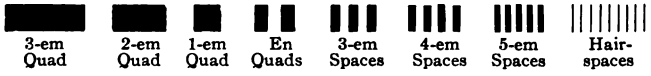


FIG. 13. *Exact sizes of quads and spaces of 10-point type*

is one-fourth of the em; a **five-to-em** space is one-fifth of the em. A **thin** space is usually a five-to-em space. The **hair space** varies from one to two points in thickness as the type increases in size. Hair spaces are also made of brass and of copper, one point and one-half point thick, respectively. (See Fig. 13 for spaces.)

It is necessary to know the blanks provided for spacing. With experience one learns to recognize the size of a space both by touching it and by looking at it.

The following exercise is helpful to a beginner. Use 12-point type.

1. With a pica ruler measure the em quad. Measure the en quad. Compare them. The en quad equals what part of the em quad? How many en quads in an em quad? Prove by placing en quads side by side on an em quad. How many points in each?

2. How many three-to-em spaces equal an em quad?

[1] Printers commonly use the terms **three-em, four-em,** and **five-em** in referring to the spaces. Do not let the similarity of terms in three-em spaces and three-em quads confuse you as to the meaning.

Prove this by placing the three-to-em spaces side by side on the em quad. A three-to-em space equals what part of the em quad? How many points in a three-to-em space? How much wider is the en quad than the three-to-em space? How many points in two three-to-em spaces? How many points wider is this than the en quad?

3. Examine the four-to-em space. Compare it with the em quad. How many four-to-em spaces equal the em quad? Place them together. A four-to-em space is how many points? Compare it with the en quad. How many points difference? Compare it with the three-to-em space. How many points difference? Which is wider and how much, two three-to-em spaces or three four-to-em spaces? How many points in a three-to-em and a four-to-em space together?

4. Ask yourself similar questions about the five-to-em spaces. Study them until you readily know one space from another. If in doubt, measure by the em quad.

5. With the other sizes of type study the spaces in the same way. When setting type, know exactly the number of points you are placing between the words. Do not vary by more than the difference between a three-to-em space and an en quad.

Spaces are aliquot parts in width of the em quad.

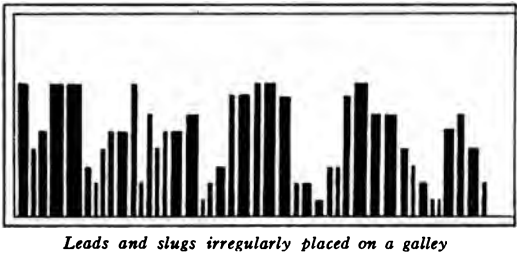
En quad	equals	½	of	the	em	quad
Three-to-em space	"	⅓	"	"	"	"
Four-to-em space	"	¼	"	"	"	"
Five-to-em space	"	⅕	"	"	"	"

The table on page 25 shows, in terms of the em quad, the combinations[1] that produce the smallest increase in space between two words.

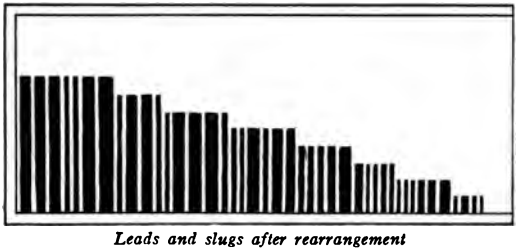
[1] Reducing the fractional parts of the em to a common denominator enables even the youngest printers to see at a glance how much they are increasing the space.

The three-to-em space (ordinarily used)	equals	1/3, or 20/60
Two five-to-em spaces	equal	2/5, or 24/60
A four-to-em and a five-to-em (1/4+1/5)	"	9/20, or 27/60
An en quad	equals	1/2, or 30/60
A three-to-em and a five-to-em (1/3+1/5)	equal	8/15, or 32/60
A three-to-em and a four-to-em (1/3+1/4)	"	7/12, or 35/60
Two three-to-em spaces	"	2/3, or 40/60

Hair spaces are used between the words in this line.
Five-to-em spaces are used between the words in this line.
Four-to-em spaces are used between the words in this line.
Three-to-em spaces are used between the words in this line.



Leads and slugs irregularly placed on a galley



Leads and slugs after rearrangement

FIG. 14. *Sorting leads and slugs*

Space between lines of type is made by placing **leads** between them. Leads (Fig. 14), are thin

strips of soft type-metal about three-fourths of an inch high and varying in thickness from one to six points. The two-point leads are commonly used between lines of type. Six-point leads are called slugs. Slugs are also made 8 points, 10 points, 12 points, and more in thickness. Brass strips, which are more durable than lead, are used in some newspaper offices.

Different printshops differ somewhat in their style of work; the following general rules, however, seem to meet the approval of many good printers:

1. A three-to-em space is used between words set in ordinary lower-case letters.

2. The en quad is used between words set in capitals or in extended letters.

3. An en quad follows a colon, a semicolon, an interrogation point, and an exclamation point within the sentence.

4. The space placed after a period[1] is slightly greater than the other spaces used in the line. If spacing with the three-to-em space, use an en quad after the period.

5. Because the comma has so much shoulder, a word followed by a comma requires less space

[1] Many printers follow the period with the em quad. The end of one sentence is marked by the period. The capital letter indicates the beginning of the next sentence. A wide space is therefore not necessary to the thought. It may detract from the appearance of the page. Hence some excellent printers are using less space.

than other words in the same line not followed by a comma. If the line is spaced with three-to-em spaces, a four-to-em space should follow the comma. This is also true of the period used to mark abbreviations.

6. A three-to-em space precedes the first and follows the last mark of parenthesis or bracket.

7. A thin space follows the first and precedes the last mark of parenthesis or bracket if there is not a wide shoulder. (The use of the one-point or the one-half-point is determined by the width of shoulder in the type.)

8. A thin space should be placed before the exclamation point, the interrogation point, the colon, and the semicolon, except when the marks are cast (as they sometimes are) with sufficient shoulder to render it unnecessary.

9. A thin space should separate the quotation marks from adjacent letters which are too close.

10. No space is needed with the dash unless it follows a comma. In that case a thin space should be placed after the em dash.

11. In poetry and at ends of paragraphs in which the type does not fill out the line, the blank is completed with quads. If the quads do not fill the line, spaces are used, placed next to the type.

12. The space on each side of a word of two letters should not be greater than the space between longer words.

13. Increase rather than diminish the space in order to "justify."

Uneven spacing is to be avoided. Spacing should seem to be the same in all lines on the page Absolute uniformity is impossible, but the best compositors approach the ideal as nearly as they can. The amount of spacing to be put between words varies. It depends upon the measure, the width and irregularity of the letters, and the leading between the lines. While the three-to-em space is generally accepted as the normal amount of space to be used between words set in ordinary lower-case roman, there are exceptions to this. Condensed faces or closely fitted fonts are much more easily read when spaced with the four-to-em space than when the three-to-em is used. Extra wide spacing is to be avoided whenever possible, as it tends to produce the "rivers of white" which greatly disfigure a page of print. In printing around cuts, however, wide spacing is of course often unavoidable, but the blemish can be somewhat hidden by normally spacing the lines which immediately precede and follow these wide-spaced ones. If there were the same slant to all the letters, and if the shoulders on all letters were equal, spacing would be reducible to a mathematical computation. Spacing, however, should only *appear* to be uniform. Consequently the good typographer must gauge the spacing of words

according to the presence or absence of punctuation, the slope and height of the end letters, and the amount of shoulder these end letters bear. It is this nicety of spacing which makes the compositor's work an art for which no rules can be laid down, but which calls for constant exercise of good taste and study on the part of the printer.

Because type is inflexible, the compositor is frequently confronted with a choice of evils. Sometimes a long word of one syllable cannot be put in at the end of the line, and the space thus left must be filled. Sometimes an improper division of a word or the ending of several successive lines in hyphens presents itself as an alternative to poor spacing. In all such cases the best compositor will preserve his spacing as far as may be, realizing that upon the spacing depends that even tone of the page which is to give to his work the effect of solidity.

Leads are placed between the lines of type primarily to render the page more readable. As a rule there should be more space between the lines than between the words in the line. Type without leads is said to be **solid;** with leads it is spoken of as **single-leaded,** or **wide-leaded,** according to the amount of space thus secured. Either practice is good form, provided the style chosen is consistently carried out. Roman type is much more legible when leaded, but for economy

of space it is sometimes set solid. Black-letter should always be set solid. It is a decorative type in which the black lines much exceed the white spaces between the lines of the letter, and these characteristics are greatly enhanced by close spacing. This holds true of such heavy body type as that designed by William Morris.

When the page is set in wide measure, it generally requires more leading than when set in narrow measure. Wide leading, however, does not demand extremely wide spacing. On the contrary, very wide spacing is fatal to the wide-leaded page, the combination resulting in a lack of coherence, giving a loose, scattered appearance.

The best results in wide-leaded pages may be observed in the work of the French typographers of the eighteenth century, who also used the extremely wide margins which this style of leading must have to band in the page.

Indention is another form of spacing used principally to mark the beginning of paragraphs. It is also used in display and semi-display lines to distinguish certain arrangements.

In ordinary book pages one em is the usual indention used to indicate to the eye the beginning of a new paragraph. Two ems are sometimes used, but only when the line is long or the page wide-leaded. The use of quotation marks (or of certain initial letters) may render necessary the

use of additional indention in order to make the capitals in dialogue or poetry align.

By courtesy of Mrs. F. R. Lillie

FIG. 15. *Reproduction of a page from a volume of St. Francis printed by the Doves Press*

Paragraph indention does not tend to make a page beautiful. Therefore, if the copy consists of one paragraph only, the indention may be omitted. If, on the other hand, there are two or more paragraphs, the omission of the indention savors of a mannerism.

Whenever the style of type permits, printers may resort to the insertion of the paragraph sign. This was a common device of the early printers and has been used effectively by William Morris and by Cobden-Sanderson of the Doves Press, but its general use cannot be commended. (See Fig. 15.)

Hanging indention is sometimes used to show a change in subject matter. In this form of indention, the first line is set the full width of the measure, while all the following lines are indented one or more ems on the left.

The squared indention consists of shortening the width by indenting each line at both the beginning and the end. It is very satisfactory when the copy admits of even spacing between the words.

The inverted pyramid is sometimes used on title pages. It was used by the early printers as a form for chapter endings. It makes an effective ending for a long paragraph on a card which does not require special display.

CHAPTER IV

DIRECTIONS FOR COMPOSITION

Composition in printing means setting type, proving, correcting, and making up into pages ready for the press.

1. Stand in front of your case. Never lean against it. If your case is too high, use a platform. Choose one which is low enough to keep your body erect, but not too low to allow your right arm free play.

2. Set your **stick** (Fig. 16) to the desired measure. To do this accurately, use a sufficient num-

FIG. 16. *A composing stick*

ber of 12-point em quads to make the desired length of line. Then, in order that the type may be a trifle loose when the stick is locked tight, insert a thin piece of paper in one end. Move the clamp up against the quads tight enough to prevent the type from falling forward, but loose

enough to permit lifting the line from the stick. Adjust the clamp firmly at this point, then remove the quads and the paper and place in the stick a lead the same length as the measure. Put in a **composing rule**[1] (Fig. 17), if you are using one, the length of the measure.

3. Hold the stick in your left hand inclined at such an angle that the type will strike the rule or lead directly. Pick up the type between the thumb and forefinger of the right hand. Select a piece of type that you can pick up and place in the stick with a direct movement of the hand, if possible without turning the type. As you place the type in the stick let your eye fall upon the nick of the next piece you will use.

FIG. 17. *Composing rule*

[1] A composing rule is made of metal, usually 2 points thick. It is type-high and may be had in any length. At each end is an ear by which to lift it out of the stick. Each piece of type is set in the stick against the rule, and when the line is finished the rule is taken out and placed in front of it.

A composing rule enables the compositor to set type rapidly. It is necessary in setting matter that is not to be leaded. It is useful in tying up. But in a class which does a variety of work, so many rules would be required that many elementary school shops do not use them for composition. In such shops the teacher usually keeps a rule to be used in tying up the type. Speed is not a factor in children's work, nor is it deemed advisable to have elementary-school children set matter without leads.

4. Begin to set type in the left-hand corner of the stick. Place the body of the type against the lead or composing rule with the nicks out and the face toward you. See that the type stands firmly on its feet and hold it in place with your left thumb.

5. Make the blank which appears between words by the use of a space, the three-to-em size.

6. Read carefully each line when it is set and correct all errors before putting in a lead. Be sure that the nicks align. Learn at the start to read your type with the letters upside down.

7. If the line is poetry which does not fill out the measure, begin at the right end of the stick and put in quads to meet the end of the type. If the quads do not make the line tight enough, add spaces, putting them next to the type. Filling the line in this manner makes distribution of type much easier and prevents the spaces from falling off the end of the line while being locked up.

8. A line of prose must end in a word or syllable. In correcting errors in the line of type or in making each line end with a completed word or syllable, it may be necessary to change the spaces first put between the words. This process is called **justification.** If more room is needed for the type, the spaces may be changed for thinner ones; if the line is too loose, wider spaces may be used. In either case keep the spaces as nearly alike as

possible. Where variation is necessary, place the wider spaces between words ending with high letters so that the spacing will appear the same.

9. Spacing should be uniform. Do not allow a thin-spaced line to follow a wide-spaced line, nor vice versa.

10. See that the type rests squarely on its feet, and justify the line uniformly. A line that will not stand in the stick unsupported is too loose. If it cannot be easily removed from the stick, it is too tight.

11. When the line has been justified, read it once more, looking for **outs** and **doublets.** Mistakes should be detected and corrected while the type is in the stick, before the lead is placed in

FIG. 18. *Correct method of removing type from stick*

position. Then put in a lead, place the composing rule in front of it, and set another line of type.

12. When the stick is full, lift out the type (Fig. 18) and place it in your **galley** (Fig. 19).

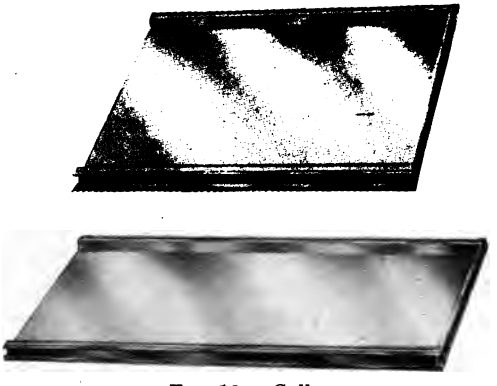


FIG. 19. *Galleys*

Set the stick in the galley. Never loosen the stick to take out the type. Do not wet the type in the stick. Always handle your type with the top of the letters toward you. In removing the type place your thumbs behind the first line in the stick, and the forefingers in front of the last line set. Press firmly together the lines of type thus held and raise them slightly while the other fingers push the stick downward. Use the sides of the second fingers, bent, to hold the ends of the lines as the type is lifted from the stick. Place it in a corner of the galley so that it rests against the left side of the galley, and with the first line of type next to the closed end of the galley.

FIG. 20. *Correct method of tying up type*

13. Tie up your work (Fig. 20) at the end of each lesson in the following manner: First moisten the type with water. This will not injure the type, but will cause it to stick together. When you have become skillful in handling type, omit wetting it. Make a knot in one end of a piece of cord long enough to pass around the type from six to ten times. Place the knot next the right end of the last line set, holding it in place with the left hand until you have wound the cord from left to right to the starting point, then bind the knot in place by crossing it. Then move the type out of the corner and continue winding in even layers until you reach the end of the cord. Cross the knot each time and be sure that the cord passes in the middle of the body, or shank, and is drawn firmly and evenly. Fasten the cord by forming a loop near the end and pushing this loop down in between the type and the binding cord. Use a composing rule to push the loop down. Draw the loop to the end of the type line, leaving about an inch of the end of the cord sticking out. To untie, pull this end and gently unwind. When you have untied a job, fold the cord and save it.

14. If you should **pi** your work, set it up in the stick and distribute it immediately. Never leave pi in your galley or on the **imposing stone.** If any type is dropped upon the floor, pick it up at once and put it in its proper place.

15. Proofs must be taken on the imposing stone if you have not a proof press. Do not take a proof until you think your work is correct. Then see that your type is on its feet and tied securely. The ink should be thoroughly distributed on an ink stone or on the disk of the press. Roll the **brayer** or roller over this and then over the type form, touching it at every point. If the roller has too much ink on it, the proof will be muddy and the imperfect letters not easily detected. Try to take a gray proof. Dampen the proof paper slightly and evenly by wiping it with a wet sponge. Carefully lay the paper, dampened side upward, on the type. With the left hand place

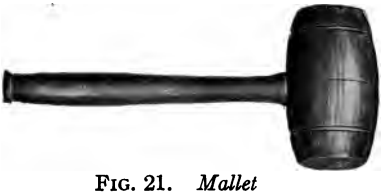


FIG. 21. *Mallet*

Courtesy of American Type Founders Company

FIG. 22. *Proof-planer*

the **proof-planer** (Fig. 22) on top of the type and hold it steady. Grasp the **mallet** (Fig. 21) with

the right hand and strike quickly and firmly a *perpendicular* blow in the middle of the planer. A steadier blow may be struck with the end of the handle than with the mallet. Lift the paper easily from the type. Or, if you have a proof press, run the roller over the proof paper.

16. Clean your type as soon as the proof is taken. Wash it with a brush wet with benzine or gasoline and wipe it with a soft cloth.

17. Compare your proof with your copy. Mark in the margin every deviation from copy, using the proofreader's accepted marks (page 42).

18. If there are mistakes in your work, make the necessary changes. In correcting a line raise it by an upward pressure of the ends until the wrong letter or letters can be lifted out by the thumb and finger. Do not use anything but your hands in working with type. If the spacing must be changed, either compute the space mathematically or use the stick and rejustify the line.

19. At the close of the lesson return to its proper place everything you have used.

20. Leave your work in your own galley in the **galley rack.**

21. See that your name is on your copy. Mark on it the length of line and the size and style of the type you are using. Indicate on your copy just where you have left off. Leave your copy on its proper hook.

PROOFREADER'S MARKS

Marginal Mark	Corresponding Mark in Proof	Meaning
caps	Make this mark	*Set in capitals*
s. c.	Make this mark	*Set in small caps*
l. c.	Make this mark	*Set in lower case*
rom	Make *this* mark	*Set in roman*
ital	Make this mark	*Set in italic*
b. f.	Make this mark	*Set in bold face*
w. f.	Make this mark	*Wrong font*
X	Make this mark	*Imperfect type*
d	Make this mark	*Delete—take out*
stet	Make ~~this~~ mark	*Stet or restore*
#	Make this mark	*Put in space*
⁀	Make this mark	*Close up space*
∨ ∧ or lg. #	Make ∨ this ∧ mark	*Equalize space*
⌣	Make this mark	*Push down space*
□	Make this mark	*Indent one em*
⌊	⌊ Make this mark	*Move to left*
⌋	Make this mark	*Move to right*
⌈⌉	Make this mark	*Raise*
⌊⌋	Make this mark	*Lower*
‖ =	‖ Make this mark	*Straighten alignment*
⊙	Make this mark	*Insert period*
,/	Make this mark	*Insert comma*
✓	Make this mark	*Insert apostrophe*
-/	Hyphenate well being	*Insert hyphen*
¶	Make this mark	*Paragraph*
⌀	Make this mark	*Invert*
tr	Make mark this	*Transpose*
(?)	Make mark	*Query to author*

CHAPTER V

PROOFREADING

Notwithstanding the careful examination of each line of type when it has been set in the stick, mistakes do occur in the work. When the type has been put into the galley, the compositor should again read it over, making any corrections he finds necessary. This trains his eye to see mistakes in the type and helps him to secure clean proofs.

When the setting-up is completed, a proof should be taken by a proof-planer or on a proof press. (See "Directions for Composition," No. 15.)

This proof should be carefully read and all mistakes marked in the margin. If more than one mistake occurs in the same line, the marks should appear in consecutive order in the margin and on the same level as the line of type. Proof-readers do not wholly agree in regard to the formation of all marks, but if the list here given is understood, minor deviations from it will be intelligible.

The compositor is expected to follow the copy, and in most printshops he is held responsible for any divergence from it. Hence corrections marked

on the first proof are made by the compositor before a proof is sent to the author.

The type to be corrected should be placed in a galley and the string removed. The correcting should begin with the first line and continue in regular order.

No tools of any kind are needed in making corrections. If the changes to be made affect the spacing, put the line in the stick, make the corrections, and rejustify the line.

If the correction involves only the substitution of one letter for another of equal width, it may be done in the galley. Lift the line in which the mistake occurs about a pica above the rest of the lines by pressing on the ends of the line with the second fingers; then take out the wrong letter with the thumb and first finger of the right hand, lower the type, and insert the proper letter.

When all the corrections have been made, a second proof may be taken. This is necessary if mistakes are numerous and if outs and doublets occur which require the running-over of the paragraph. This second proof, called a **revise,** should be compared with the first proof. If the compositor has not made all the marked corrections, if he has made other mistakes, or if lines have been transposed, he again corrects his work. When his proof is correct to copy, it is sent to the author.

CHAPTER VI

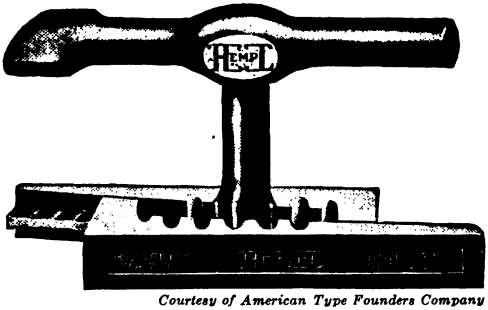
LOCKING UP

When the page or job has been spaced out to the required length and tied up in a proper manner, it is taken to the imposing stone to be locked up preparatory to putting it in the press. The imposing stone is a large, flat stone (although sometimes an iron surface is used instead of a stone) mounted upon a frame or cabinet usually a little higher than the ordinary table. (See Fig. 23.)

The page or job is laid on the imposing surface with the *top* of the type at the left hand of the **stoneman,** unless the page or job is set in a measure wider than its length, in which case the top of the type is turned toward the body of the stoneman. With the type in either of these positions the impression taken on the press is easily read. An iron frame called a **chase** is then put around the type, which should be directly in the center of the chase from right to left, but a trifle below the center between the top and the bottom. Placing the type below the center of the chase prevents undue strain on the press. The bottom of the chase is that part nearest to the body of the

FIG. 23. *Correct method of locking up type*

stoneman. The space between the type and the left side of the chase and that between the type and the bottom of the chase is then completely filled with wooden **furniture.** The remaining space, namely, that between the type and the right side of the chase and that between the type and the top of the chase, is also filled in with



Courtesy of American Type Founders Company

FIG. 24. *Quoin and quoin key*

wooden furniture, but there should be left a space large enough for the **quoins** (Fig. 24) and a 6-point **reglet** on each side of the quoins. The object of this arrangement is to bring the quoins on the side and end opposite the feed gauges, an advantage if the form is unlocked during the work.

Since the lengths of labor-saving wooden furniture are multiples of ems, the pieces of furniture when longer than the type must overlap so that they do not bind. This can be accomplished by placing at either side pieces of furniture slightly

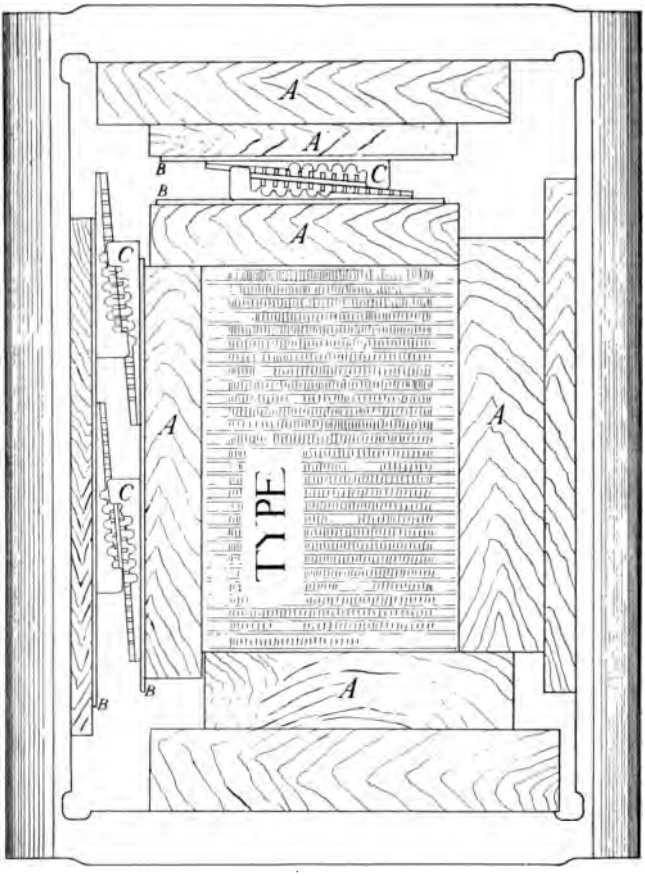


FIG. 25. *A locked chase with type in place*
A, wooden furniture; *B*, reglets; *C*, quoins

longer than the type form, the ends extending one toward the left, the other toward the right. The end furniture should be selected and placed in a similar way. So arranged, the furniture gives as the quoins move. The remaining pieces should be of the same length as or of greater length than the ones already in position. Quoins should be placed one piece of furniture removed from the type on the right of the chase, and similarly between the type and the top of the chase. The quoins should be so placed that the wedges next to the type point toward the left and the bottom of the chase, respectively. Reglets should be put on each side of the quoins so that when the quoins are forced together their sliding will not damage the wooden furniture. (See Fig. 25, page 48.) After the wooden furniture has been placed on all four sides of the type, the string should be removed from the type and the quoins slightly tightened with the fingers.

Then plane the form *lightly* in order to make sure that all the type is on its feet. The wooden planer is laid gently on the type and tapped with a mallet to force down such pieces of type as may extend above the others. The quoins are then turned with the quoin key, one after another, beginning with those quoins which are placed parallel to the leads. Turn the key until enough pressure is secured to hold the entire form firmly

together when it is lifted from the imposing stone. If too much pressure be applied, it will cause the form to spring or will break the chase. Test by lifting one side of the chase and shaking it gently. Test further by pressing the type with the fingers. *The locking-up process is a measure of the compositor's work*, for uneven justification may result in the pulling out of the type while it is on the press, causing spoilage and delay. If the form holds, it is ready for the press.

CHAPTER VII

IMPOSITION

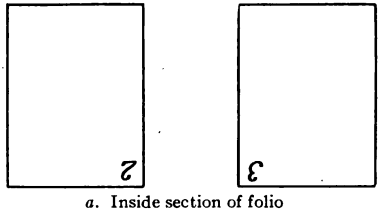
A form may consist of a single page or of a number of pages. The proper placing on the stone and the arranging of these pages in the chase is called **imposition.**

All forms of imposition may be best understood by paper folding. In the case of a folio the process is simple. Fold a sheet of paper once lengthwise, and without cutting the fold number the pages. Open the paper and you will find pages 1 and 4, the first and the last, on the outside and pages 2 and 3 on the inside of the sheet.

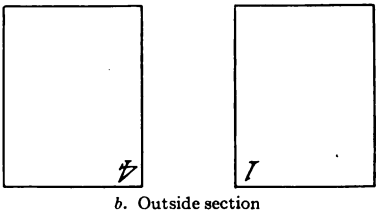
The outside pages, 1 and 4, may be locked in one chase and the inside pages, 2 and 3, may be locked in another. The first page is placed on the stone at the right, the fourth page at the left. The second page is placed on the stone at the left, and the third page at the right (Fig. 26). The head of the page should always be toward the stoneman.

The printed folder is called a sheet, and this manner of printing is spoken of as **sheetwise.** Printing sheetwise requires double the presswork

that would be required if the matter were run in a four-page form, but it is often necessary when the press is small.



a. Inside section of folio



b. Outside section

4 occupies place of 2, and 1 occupies place of 3.

FIG. 26. *Method of placing pages on stone to print folio sheetwise*

Another scheme of imposition is, if the chase and press are large enough, to place the four pages in one form. After the paper has been printed on one side, the sheet is turned "end for end" and printed on the opposite side. When printed, page 1 is on the back of page 2 and page 4 is on the back of page 3 (Fig. 27). The paper is then cut in halves crosswise, which gives this manner of imposing the name of **half-sheet imposition,** and the form is called a "work-and-turn" form. This

method saves presswork and permits an accurate register. When a "work-and-turn" sheet is cut in two, there are two folders as a result of the sheet going through the press twice. When the sheetwise method is used, the two runs through the press result in only one folder. With either method, sufficient time for drying should be allowed before "backing up" is begun, or the ink will be smeared on the page.

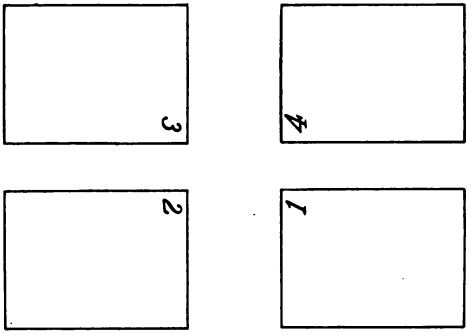


FIG. 27. *Arrangement on stone of pages of a folio for half-sheet imposition—a "work-and-turn" form*

An imposition of eight pages is based upon the same principle as is that of four pages. Make a quarto by folding a sheet of paper first lengthwise, then crosswise. Number the eight pages and open the paper as before. Note carefully the pages that must be printed in pairs. In the quarto, as in the folio, there are an outside and an inside section.

The diagram (Fig. 28) shows the order of an eight-page "work-and-turn" form imposition for printing either sheetwise or half-sheet. It may be printed as the folio is printed.

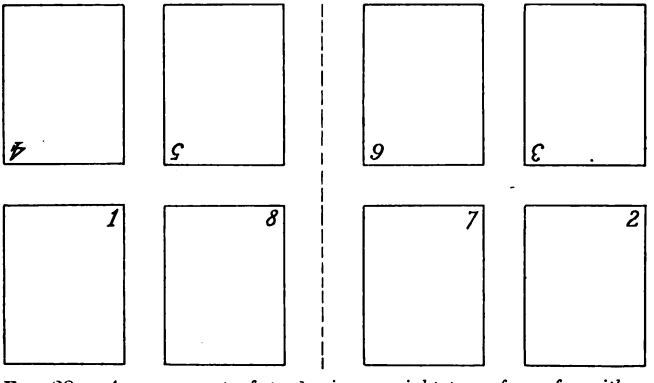


FIG. 28. *Arrangement of pages in an eight-page form for either sheetwise or half-sheet imposition*

Fig. 30 shows a simple method of determining the proper arrangement of the pages on the stone

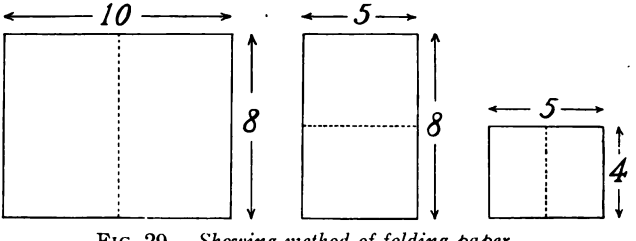


FIG. 29. *Showing method of folding paper*

for an eight-page "work-and-turn" form. Fold a sheet of paper as indicated in Fig. 29. Mark

folio 1 on the inside of the first page — what would really be page 2 of a printed folder. Then mark folio 2 on what would be page 3. Skip the next two pages and mark folios 3 and 4 on the next two. Skip the next two and mark folios 5 and 6 on the next two following. Skip the next two and mark folios 7 and 8 on the two following pages. After marking the first four folios slit the lower corners of the rest so that you may mark them easily. Unfold the sheet and you will find that the proper position for the folios is shown.

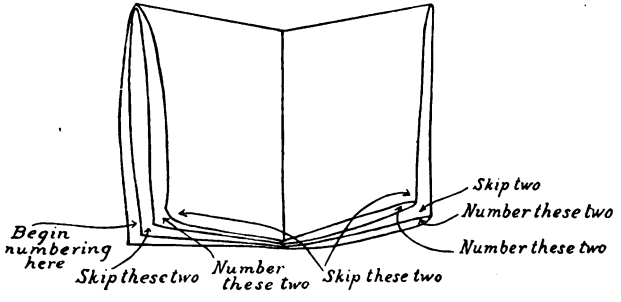


FIG. 30. *Method of numbering pages to determine proper arrangement of pages in a form*

Sheets as large as one hundred twenty-eight pages may be imposed to be printed together on the large cylinder presses, but in bookwork not more than eight pages of thick paper or sixteen pages of paper of medium thickness are printed to be folded together. (The manner of folding,

hand or machine, also influences the imposition.) Sixteen pages (Fig. 31), sixty-four pages, or one hun-

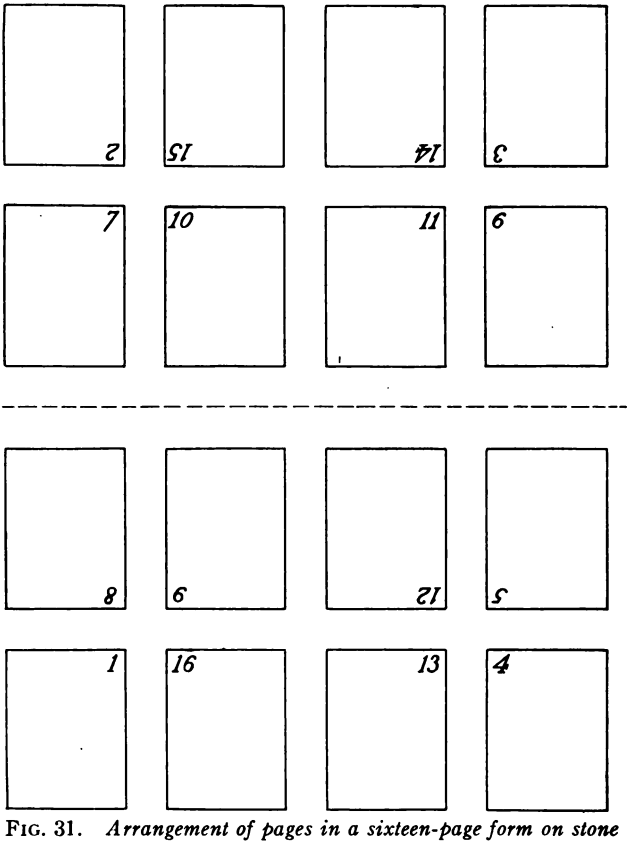


FIG. 31. *Arrangement of pages in a sixteen-page form on stone*

dred twenty-eight pages are imposed on the same principle as that shown in the folio and quarto.

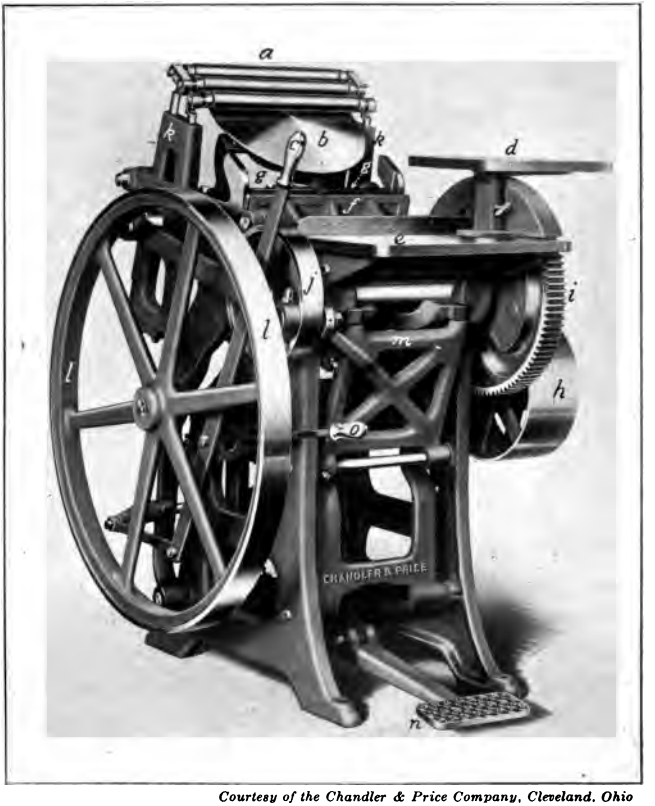
Fold paper to sixteen pages and compare the relative position of the mated pages (beginning with the first and the last) with those of the quarto.

Many stonemen determine the outside and inside sections by beginning with two and canceling every alternate pair of pages. As this indicates, page 1 is always on the outside section and page 2 always on the inside section.

4 Pages	8 Pages	16 Pages
1 2 3 4	1 2 3 4 5 6 7 8	1+16=17
		13+ 4=17
1+4=5	1+8=9	5+12=17
2+3=5	2+7=9	8+ 9=17
	3+6=9	7+10=17
	4+5=9	11+ 6=17
		3+14=17
		15+ 2=17

A method of checking is to add the page numbers of any pair of pages. The sum is always one greater than the whole number of pages in the section.

In locking two or more pages in the same form the stoneman must so arrange the furniture as to give the printed page the proper margins. He should know exactly what the head, back, front, and tail margins are to be and should make up the form to fit the paper. If the book is to be trimmed, the stoneman must allow for trimming. The usual allowance on an octavo for waste is one-eighth inch for the head, one-fourth inch for the front, and three-eighths inch for the tail.



Courtesy of the Chandler & Price Company, Cleveland, Ohio

Fig. 32. *A job press*

a, rollers; ***b***, ink plate; ***c***, throw-off or trip; ***d***, stock board; ***e***, feed board; ***f***, platen; ***g***, bed; ***h***, pulley wheels; ***i***, large cam wheel; ***j***, small cam wheel; ***k***, right and left roller frames; ***l***, fly-wheel; ***m***, rocker lock; ***n***, treadle; ***o***, belt shifter

CHAPTER VIII

THE PRESS

The press should be kept clean and should be oiled once each week. A little oil, but not enough to run out on the machinery, should be put into each hole. The machinery should be wiped and examined weekly to see that all nuts and bolts are tight. The rollers should not be left dry. Each night a little machine oil should be put on the disk and the rollers run over it. In the morning, wipe clean with a cloth wet with kerosene.

Put the ink on the extreme left hand of the disk, squeezing a very little from the tube or, if it is kept in cans, putting it on with an ink knife. The ink should be thoroughly distributed upon the disk and rollers before the form is placed in the press. If the runs are large, an ink fountain should be attached to the press and the ink thus distributed. (Fig. 32 shows parts of press.)

The **platen** must be covered with a paper covering called the **tympan,** the number of sheets varying inversely with the area of the printing surface. For a Gordon press an average tympan for a full form of type consists of one sheet of hard pressboard and from three to five sheets of print

paper covered by a manila top sheet; or, omitting the print paper, use three or four manila sheets on top of the pressboard. A small form requires less tympan. It is better, when taking the first impression, to have a light tympan, as a strong impression is not so good a guide for **making ready** as a light one. It is a good plan to start with a light impression and add tympan until you get sufficient impression.

When the form has been put upon the press, the **grippers** should be adjusted immediately so that they are clear of the form. If too close, they may be moved outward from the center or even removed from the press when necessary.

Next a press proof should be taken and carefully examined, not only for typographical errors, but for defective type, improper planing, and other oversights. The proof should be taken on clean paper of the stock to be used. An examination of the back of the impression will indicate whether to add or subtract from the amount of print paper used as packing.

The printing press is so constructed as to give an even impression on every part of the printing surface. But this can be done only when all parts of the form resist pressure equally. If the form is solid type and the type is not worn, or else is worn evenly, the resistance is uniform. If the form contains type, cuts, and blank spaces, the

resistance is not equal. The cuts may not be exactly type-high, since the mount is not always of uniform thickness. These defects may be remedied by **underlaying,** which consists of putting paper of varying thickness behind parts of the form to bring the whole form up to the same level.

The resistance of a cut varies with its character. A solid black cut resists more than the type does, an outline cut resists less, while the blank spaces in the form offer no resistance. Cuts with contrasts of light and shade resist more in the dark portions than they do in the light parts. When a form is made up of parts which differ in resistance, this difference must be equalized by a corresponding difference in the pressure applied. This is secured by an **overlay,** as the process of pasting bits of paper on the tympan is called. In taking an impression for an overlay, it is better to loosen the top sheets from the bottom bale, throw them back, and print on the bottom tympan sheet. The overlay should then be carefully cut and pasted where it is needed over the impression on the bottom sheet. Overlaying is a delicate operation that requires time, but it is time well spent.

The **feed gauges** should be placed on the top sheet of the tympan. The width of the margins should first be decided upon and then the *exact* distances from the top and from the lower side

of the impression measured and marked by points. Then lines should be drawn through these points, one parallel to the lines of the print and the other at right angles to them. The following is an easy, accurate method of drawing these lines: Place one side of a mechanical draftsman's triangle under the top line of the print in such a position that the other side of the triangle cuts the point marked below the lower side of the impression.

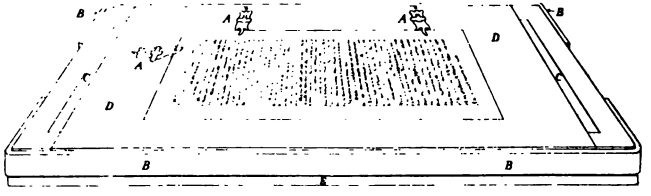


FIG. 33. *The guide pins in position*

A, guide pins; *B*, tympan bales; *C*, press-board; *D*, tympan sheet; *E*, projecting edge of platen.

Draw a line through this point, extending it long enough for as many guide pins as are necessary. Then, with the line just drawn as a base, draw the other line at right angles to the first line and running through the other point. The guide pins can then be set on these lines in the exact position at the first try. There is no guesswork about it. (See Fig. 33.) Spring gauge pins are the best kind to use, as they never slip out or become loose.

The impression should be carefully washed from the tympan before one begins to feed. In feeding,

FIG. 34. *Correct method of holding paper in feeding the press*

place the sheet on the tympan so that the side and the top touch the respective guides (Fig. 34). If not skillful enough to do this directly, feed to the bottom gauges and slide to the end gauge. Put the paper in with the right hand *as the platen opens* and take it out with the left hand. Work for a steady, direct movement in unison with the press. Have the motor adjusted to the rate of speed at which you can feed without feeling hurried, and use the throw-off lever *only when it is necessary*.

When the form has been printed, lift it from the press, wash the type in benzine or gasoline, using first a soft brush and then wiping dry with a cloth. Then unlock the form and place the type in a galley. Washing with benzine or gasoline does not clean the type well; it is therefore better to wash it in a weak lye solution before it is distributed. Use a lye brush with a handle and leave the form under running water until all the lye water has been washed out.

When washing the press wash the disk first. Use waste, pouring kerosene directly on the disk. Move the rollers up to the edge of the disk and wash first the top one, then the others, with a cloth wet with kerosene. End by going over the disk after the rollers have been thoroughly cleaned. Do not leave the rollers on the disk when the press is not in motion.

Heat and humidity cause the roller composition to soften, and the surface then does not take the ink evenly. This difficulty may be obviated by the use in warm weather of summer rollers, which contain more glue than winter rollers and so are harder and tend less to become soft and sticky.

FIG. 35. *Correct method of dropping letters in distribution*

CHAPTER IX

THE DISTRIBUTION OF TYPE

When the form has been printed, it is spoken of as "dead," and the type should be carefully washed and put back into the case. The process of returning the type to its proper compartments in the case is called **distribution.** No one should attempt distribution who has not acquired some skill in handling type; in the beginning he should distribute but one line at a time. With a sponge, wet the type which is to be distributed. Pick up the line on a slug or lead, hold it in the left hand with the nicks up, the thumb pressed against one end of the lead, the second finger against the other, while the bent first finger supports the lead in the middle. The line is thus in the same position as when in a stick. Read the last word in the line (next the second finger), at the same time taking it up with the right hand. To take up the word, slide it forward with the second finger, then with the first and second fingers above and the thumb below the type lift it off the lead. A slight movement of the thumb and first and second fingers (the type resting partly on the third finger)

will enable you to drop the letters one at a time, each in its proper box, without again looking at

FIG. 36. *Correct method of distributing type*

the type (Fig. 35). Spell the word in your mind as you go along.

Special attention should be given to the distribution of spaces. They should be carefully separated and each size put into its own box. The mixing of the various sized spaces is a sure indication of a careless printer.

When you are able to distribute one line without spilling the type, take up two or more lines at one time. When you have become skillful, take

up as many as you can hold in your hand, with the first word of each line resting against the thumb, the mass of type in the hand supported by the first finger held back of the type and the bent second, third, and fourth fingers underneath the bottom lead or slug (Fig. 36).

Distribution should never be hurriedly or carelessly done. It means a "dirty" proof on the next job and time wasted in correcting. Distribution is partly a matter of skill, but more largely a matter of honesty—a desire to put the type where it belongs.

CHAPTER X

MEASURING

Composed type is measured by the em, a square of the body set. The measure or width of any page is expressed in picas. Leads and blanks are measured as type.

To find the number of ems in composed type, multiply the number of ems in the width by the number of ems in the length. *Example:*

a) A page of 12-point type set 20 picas wide measures 33 picas in length. Find the number of ems. *Answer:* $33 \times 20 = 660$ ems.

b) A page of type set in 8-point is 24 picas wide and 36 picas long. How many ems?

Solution:

1 pica = 12 points.

24 picas = 24×12 points, or 288 points (number in line).

An em in this case is 8 points.

In 288 points (divide by 8) there are 36 ems (width).

36 picas (the length) = 36×12 points, or 432 points (in length).

In 432 points there are 54 ems in length. 54×36 ems = 1944 ems.

Compositors in commercial shops sometimes work by the piece, in which case they are paid according to the number of ems in the type set. With a type gauge they measure the width and length of the type set and compute the total number of ems. Sometimes the length is more than an even number of ems of the size in which it is set. In this case it is customary to drop the fraction if it is less than half an em and to add one if it is as much as or more than one-half an em.

To find the number of pages a manuscript will make when set in type, first count the number of words on a page which is set in the desired type. Divide the number of words by the number of square inches on the page. This will give the number of words to the square inch on the page, which is the unit of measurement.

Find next the number of square inches in the type page in which the manuscript is to be printed and multiply this by the number of words to the square inch. The product is the number of words to the printed page.

Then divide the number of words in the manuscript by the number of words to the page, and the result will be approximately the number of pages required to set the manuscript.

It is frequently necessary to know the number of pounds of type needed to set some job. It has been estimated that type which weighs one-fourth

of a pound will set one square inch. To find, then, the quantity of type required for a given page, multiply the number of square inches on the page by one-fourth. The following "rule-of-thumb" is sometimes used for this purpose: Divide the number of square inches in the page by four. The result is approximately the number of pounds of type needed to set the page.

Tables have been made showing the approximate number of words to the square inch when type is set solid and when it is set leaded.

NUMBER OF WORDS TO THE SQUARE INCH

8-point, solid	32
8-point, leaded	23
10-point, solid	21
10-point, leaded	16
11-point, solid	17
11-point, leaded	14
12-point, solid	14
12-point, leaded	11
14-point, solid	11
14-point, leaded	9
18-point, solid	7
18-point, leaded	5

CHAPTER XI

ENGLISH

A. PUNCTUATION

Many writers rely upon their printers for technical correctness in such details as spelling, punctuation, and capitalization, and readers generally ascribe any mistakes they find in these matters to careless typesetting and proofreading. For these reasons the printer must be prepared to avoid mistakes himself and to correct those of others.

Printshops differ in their ways of doing things, but each shop has for its own guidance a consistent plan of work. The following fundamental rules may be safely followed in the school printshop. They do not cover all questions of typographic style that will arise, but they are the rules most frequently needed and are based upon standard practice. They are grouped together for reference.

Period

1. Use a period at the end of a declarative or imperative sentence:

The year contains twelve months.
Do your work neatly.

2. Use a period after abbreviations:

Dr. Mr. Mrs.

Caution. A period is not required after running heads, centered titles, date lines at the top of letters, address lines at the end of articles, Roman numerals when standing alone, chemical symbols, or signatures. It may be used after Arabic figures in the numbering of paragraphs.

Interrogation Point

Use an interrogation point at the end of an interrogative sentence:

What time is it? Who goes there?

Caution. An interrogation point is not required after a question that is really a request:

Will you please close the door.

NOTE. A question within a declarative sentence retains the question mark:

The question, What became of it? was never answered.
The two basic questions are: first, What do we desire? second, How shall we attain our end?

Exclamation Point

Use an exclamation point at the end of an exclamatory word, phrase, or sentence:

Phew!
What kindness!
Give me liberty or give me death!

Comma

1. Use a comma to indicate slight pauses in thought, and wherever clearness requires it. The following sentences illustrate the necessity of the comma:

While he watched, a beggar passed by.
What we saw, proved the case.
As you know, the earth turns on its axis once a day.
The night before, he had said that there was no danger.
As I was passing, the house burst into flames.

Caution. Never separate the parts of a sentence that belong together and are in their natural order; as: subject and predicate; predicate and complement; adjective and noun; adverb and adjective.

2. Set off by commas all parenthetical elements:

a) Appositives:

William Morris, the greatest art printer of modern times, was also a poet.

b) Non-restrictive adjective clauses, that is, adjective clauses that can be omitted and leave the sentence complete:

The School of Education, which I attend, is situated on the Midway.

The heights, which were at some distance from the town, also were captured.

(Commas are always to be used in pairs in the case of non-restrictive clauses.)

NOTE. A restrictive adjective clause, that is, one that is essential to the meaning, should never be set off by commas:

The heights which we stormed were finally captured.

3. Set off by commas words of direct address:

Henry, where are you going?
When you come, Jane, we will weed the garden.

4. Set off by commas absolute and participial phrases:

The mail having come, we began to read our letters.
Being tired, he went home.

5. Set off by commas the words "yes" and "no" when they are part of the answer to a question:

Will you come? No, I cannot.

6. Use a comma to separate the terms of a series, whether words, phrases, or clauses, where no conjunctions are used or where one conjunction is used to join the last two terms:

I came, I saw, I conquered.
We had cake, candy, and fruit.
The smoke was rising, the trees were crackling, and the forest fire was well under way.

7. Use a comma to separate coördinate clauses when they are joined by a simple conjunction:

No rule can be framed to cover all cases, but the underlying principle is clear.
Remove the clause, and the sentence is meaningless.

8. Use a comma after a dependent clause which precedes the principal clause:

When the day came, we carried out our plan.

9. Use a comma to separate the parts of a date or of an address:

January 27, 1916

CHICAGO, ILLINOIS

June 7, 1916

10. Use a comma after "alas" and "oh" in sentences like the following:

Alas, we all suffer.

Oh, help the lady!

Do not use a comma after the vocative "O":

"O world! O life! O time!"

Semicolon

1. A semicolon is used (*a*) sometimes like a large comma and (*b*) sometimes like a small period:

a) The schoolhouse, being deserted, soon fell into decay, and was reported to be haunted by the ghost of the unfortunate pedagogue; and the plowboy, loitering homeward of a still summer evening, has often fancied his voice at a distance, chanting a melancholy psalm tune among the tranquil solitudes of Sleepy Hollow.—*Irving.*

b) To err is human; to forgive, divine.

2. The words "namely," "for example," "as," and similar words, when used to introduce an example or an enumeration, are usually preceded by a semicolon and followed by a comma.

Colon

Use a colon in the following cases:

1. After a salutation:

DEAR SIR:
Ladies and Gentlemen:
Friends, Romans, Countrymen:

2. After a word, phrase, or clause used to introduce something that follows, such as a list or an extended quotation:

The colors of the spectrum are these: red, orange, yellow, green, blue, indigo, and violet.

3. Between the parts of a number denoting time, and in Bible references citing chapter and verse:

8:30 A.M.
Luke 17:20
Matt. 10:15—11:10

Quotation Marks

1. Use quotation marks, two turned commas at the beginning and two apostrophes at the end, to inclose a direct quotation:

The old man said, "It is time to go home."

Caution. Do not inclose indirect discourse in quotation marks:

The old man said that it was time to go home.

2. When an extract consisting of more than one paragraph is quoted, the turned commas are

placed at the beginning of each paragraph, but the apostrophes are used only at the end of the final paragraph:

> "But that which endears Giotto to the hearts of his countrymen, to the hearts of all those who love beauty, in fact, is his exquisite bell-tower in Florence, Giotto's Campanile.
>
> "It is a tall, slender shaft of variegated marbles, detached from the church, as all bell-towers are in Italy, but it is so graceful, so beautiful, so rich in detail, and so perfect in proportion, that you cannot wonder men gaze on it with admiration."

NOTE. When the observance of Rule 2 causes an unsightly appearance, the extracts may be set in a smaller size or different style of type, or in narrower measure, in a separate paragraph. The quotation marks may then be omitted, as they are not needed to show that the matter does not belong to the text. When, however, a reduced size of type is used for a series of quotations following directly after one other, the quotation marks are retained for each quotation.

3. A quotation within a quotation is indicated by single quotation marks; one within that by double marks again:

> Bertholde answered, "I wish to remain free; but I cannot if I accept your presents, for the proverb says, 'He who takes, sells himself.' "

4. Slang phrases, or others current in speech,

but not in good taste for writing, are quoted when they appear in print:

The boys thought they could "put one over" on the teacher that day.

5. The punctuation of quotations is illustrated by the following sentences:

She answered, "I am here."

"This is the best of all!" they shouted.

Said he to the boy, "Whither wilt thou look for thy goats?"

Did John say, "I know"?

"Yes," said Miss Polly, "three generations."

"No," said Mrs. Treadwell. "I'll tell you what I did see."

"If he does," said King Hal, "I shall have him hanged a quarter of an hour afterward."

"Ah, but that would not save my life," said the Fool. "Couldn't you have him hanged a quarter of an hour before?"

"Where are you going?" asked the man.

6. In dialogue each separate speech is quoted, and a new paragraph is required for each speaker in turn.

NOTE. The period and the comma are always placed inside the quotation marks. The colon, the semicolon, the exclamation, and the interrogation point are sometimes placed within and sometimes without the quotation marks, depending upon whether the punctuation is part of the quotation.

Dash

Use a dash:

1. To indicate the abrupt breaking off of a sentence or thought:

Here are the tickets—don't lose them.

2. Before a word or group of words that repeats or summarizes or modifies what has gone before:

We are not here to play, to sleep, to dream—in other words, to drift.

Greece, Rome, Carthage—all are gone.

3. Sometimes before a quotation which begins in the middle of a line of poetry:

We, too, were—

"—the first that ever burst
Into that silent sea."

4. As a substitute for marks of parenthesis:

She had a basket on her arm—she, too, in spite of her pride—and very humbly she offered her wares.

Marks of Parenthesis

Ordinarily dashes may be used in place of marks of parenthesis. When marks of parenthesis are used, the inclosed matter is irrelevant.

Hyphen

1. When it is necessary to divide a word at the end of a line, make the division by syllables and place a hyphen at the end of the line.

2. The hyphen is used in many compound words. No simple rule can be given for its use

or for its omission. Correct practice in each case can be learned only from observation and the study of the dictionary:

surgeon-general together
self-preservation without

3. Compound words denoting number are hyphenated:

eighty-six forty-nine

4. Two words which are combined into one adjective before a noun are hyphenated:

public-school curriculum baking-powder biscuit

Apostrophe

Use an apostrophe in forming:

1. The possessive case of nouns:

the boy's book James's ball boys' hats

Caution. An apostrophe is never used to form the possessive of personal or relative pronouns:

its theirs whose hers his

2. The plural of figures, signs, letters, and words used as words:

The 2's and the 5's look alike.
+'s and −'s are confusing.
My father studied the three R's.
Use fewer "and's."

3. Use an apostrophe also to take the place of the omitted letter or letters in a contracted word:

'Tis mine. Couldn't you do that?

Brackets

1. Brackets are used to inclose a word or words of explanation inserted in a quotation by the person quoting. The quoted words are shown by the quotation marks; the interpolated words are within the brackets:

> The speaker declared, "The centuries of war are passed [said in the nineteenth century] and an era of peace is before us."

2. Brackets are used to supply omissions or to correct errors in the text. (This is a common practice of librarians on catalog cards when supplying the date of publication or other missing information.)

> Our party explored the region last year [1910].

3. Brackets are used to inclose a parenthesis within a parenthesis:

> "His last act (like a choleric old gentleman [though evidently the writer's favorite]) was to kick his doctor."

B. DIVISION OF WORDS

There is much difference of opinion among printers, writers, and makers of dictionaries as to the division of words into syllables. The best general practice is to follow the rules for pronunciation. The following suggestions are made on that basis. When in doubt, consult the dictionary, following the one you are accustomed to use as authority, but keep an open mind on the

subject and be ready to note the usage of authorities on printing.

1. A word of one syllable cannot be divided:

has did should though

2. Words can be divided only on a syllable; it is best to divide on an accented syllable:

constitu-tion

NOTE. If the division on the accented syllable interferes with the proper spacing of the line, the printer should divide the word on an unaccented syllable.

3. It is better to end a line with a single vowel syllable than to begin the next line with the vowel, even though the accented syllable may be placed as in "bene-fit."

4. Unless the measure is very narrow, a syllable of two letters should not be left at the end of a line or carried to the beginning of the next. For instance, do not carry over *ly*, *ed*, or *er*, and do not divide such words as "al-most," "re-mit," and "oc-cur."

5. Never separate a syllable of one letter from the rest of the word:

a-way a-gain

Words ending in *ed*, as in the past tense of regular verbs, should not be divided:

lingered printed wronged

6. Do not divide words of four or five letters:

lady maybe

7. Compound words should be divided only at the point of their union as compound words:

Irish-American self-filling

8. Do not separate the initials of a name. Carry them over to the next line. This rule applies also to P.M., A.M., A.D., and all similar combinations.

9. Do not divide figures at the end of a line.

10. Do not end more than two consecutive lines with a hyphen.

C. SPELLING

1. Titles of honor and respect preceding the surname should be spelled in full; for example, General Grant (although Gen. U. S. Grant may be permitted).

NOTE. "Mr.," "Mrs.," and "Dr." are exceptions to this rule.

Compound titles should always be spelled in full, and both words should be capitalized:

Vice-President Marshall

2. Christian names should be written in full unless they are used as a firm name or as a signature:

Woodrow Wilson O. Henry T. B. Brown & Co.

3. All numbers of less than one hundred which occur in ordinary reading matter should be spelled out. Matter statistical or technical in character is an exception to this rule. (See also Rule 4, following.)

4. Numbers beginning a sentence should always be spelled in full.

5. Round numbers should be spelled out; for example, five hundred.

6. When round numbers and numbers not round occur in the same sentence, use figures for both, transposing the sentence, if necessary, in order to avoid beginning it with figures.

7. Spell out the time of day when A.M. or P.M. is not used in connection with it. In that case use figures:

three o'clock half after nine 4:00 P.M.

8. Spell out the ages of persons:

sixty-five years old

9. Print in full the figures representing the year:

1916 (not '16)

10. Spell out the names of states if they are short. The name of any state occurring in ordinary reading matter should be spelled out:

We visited Portland, Maine.

11. Spell out the names of months.

D. CAPITAL LETTERS

Three lines under a letter or word indicate that it is to be set in capitals (caps).

1. Capitalize proper nouns and adjectives. Capitalize common nouns when they are used as part of a title:

The United States of America is a republic.

The French are a more frugal people than either the English or the Americans.

Busy Bee Club

Mississippi Valley

Rheims Cathedral

NOTE. The word "Van" in Dutch proper names is usually capitalized; the Moorish "Al" and the Turkish "El" are always capitalized; the German "von" is not capitalized unless it begins a sentence; the French "de" is capitalized except when it is preceded by a Christian name:

Dr. Van Hoosen, *but:* Henry van Dyke (changed by Dr. van Dyke)

Haroun Al Raschid

Professor von Holst

De Vigny, *but:* Georges de Vigny

2. Capitalize titles when they precede proper names; titles of United States governmental officers of high rank are always capitalized:

The matter was referred to Professor Angell.

The committee conferred with President Wilson.

The President sent orders to Commander-in-Chief Pershing.

3. Capitalize names of societies and corporations:

The Red Cross Society
The Standard Oil Company

4. Capitalize the words "street," "avenue," and similar words when they are used in connection with names:

Massachusetts Avenue
Thirty-first Street

5. Capitalize the first word of a sentence and the first word of every line of poetry:

Printing was invented by the Chinese.

Breathes there the man with soul so dead
Who never to himself hath said,
"This is my own, my native land!"

6. Capitalize important words in titles of books, newspapers, and magazines; that is, nouns, pronouns, verbs, adjectives, and adverbs:

A Tale of Two Cities
Chicago Tribune
The Nation

7. Capitalize the pronoun "I" and the vocative "O":

He asked if I were going home.
Build thee more stately mansions, O my soul.

NOTE. The interjection "oh" is not capitalized except when it begins a sentence:

We traveled, oh, so many miles across the snow.

8. Capitalize the names of the days of the week, the months of the year, and civic holidays:

The class meets on Mondays and Thursdays.
In some climates November is a cheerless month.
The Fourth of July Memorial Day

NOTE. Do not use capitals for "spring," "fall," "winter," and "summer."

9. Capitalize the names applied to the Deity:

God Almighty Jehovah

NOTE. Personal pronouns which refer to the Deity are also capitalized, as "His," "Thy," "Thine." Relative pronouns used of the Deity, as "who," "which," are not capitalized.

10. Capitalize certain abbreviations, such as:

Mr. Dr. St. Ph.D. Co.

11. In hyphenated words occurring in titles, capitalize the second member of the compound only when it is a noun:

Twentieth-Century Inventions, *but:* Fifty-fifth Street; So-called Wealth

12. Capitalize nouns or adjectives designating sections of the country when they are used as names:

The old Northwest
The solid South

Caution. Do not capitalize the words "north," "south," "east," and "west" and their derivatives when they indicate direction.

E. CAPITALS AND SMALL CAPITALS

Two lines under a letter or word indicate that it is to be set in small capitals (s.c.).

1. Use caps and small caps for the salutation of a letter:

DEAR SIR:

2. Use caps and small caps for the names of the town and state in a letter heading:

CHICAGO, ILLINOIS

3. Use caps and small caps for signatures:

JOHN SMITH

4. Use caps and small caps for SECTION in constitutions at the beginning of paragraphs.

5. Use caps and small caps for NOTE at the beginning of a paragraph.

6. Use caps and small caps for WHEREAS in resolutions at the beginning of a paragraph.

Small capitals, set close or with thin space, are used for A.M. and P.M. and B.C. and A.D.

F. ITALICS

One line drawn under a letter or word indicates that it is to be set in italics. Italics may be used for:

1. The preface of a book.
2. An introductory note.
3. A circular letter.
4. Short bits of poetry.

5. Foreign words and phrases not yet anglicized:

Merci!
De gustibus

6. Address lines in letters:

Mr. John Smith, Evanston, Illinois:

7. Address lines in speeches:

Mr. Speaker:
Friends:

8. The word *Resolved* in formal resolutions.

9. The signature at the end of an extract.

10. The title or office of a person following his signature:

JOHN JONES, *Secretary*
L. E. BROWN, *Chairman*

11. The words *To be continued* at the end of an article and the word *Continued* or *Concluded* at the beginning of an article.

12. Subheads, side-heads, and running heads.

13. Titles of publications—books, pamphlets, periodicals, and newspapers.

14. If the title of a book begins with "the," it should be italicized and capitalized. In the name of a periodical "the" should be printed in lower-case roman even if a part of the title; an exception to this rule is the title of a periodical which consists of only two words one of which is "the":

I read the *Chicago Tribune, but:* I read *The Nation.*

CHAPTER XII

ART IN PRINTING

Art as related to printing is generally taken to mean printing done with specially designed type on hand-made paper, producing a result that is far removed from utility. Books thus made are usually issued in a limited edition intended for only a few persons—those artistic enough to appreciate the excellence of such books or rich enough to gratify their aesthetic whims.

Art in printing, however, is not mysterious; it can be learned by any printer and achieved in any printshop. It may be strictly utilitarian—in the sense of being useful—and it may be attained with purely commercial type. It is not necessarily expensive. Well-designed type can be bought as cheaply as poorly designed type, and a well-arranged page costs no more than one that disregards the principles of design.

Simplicity is the keynote of artistic printing, which is, after all, only putting into consistent relations with one another all the factors involved in printing. Every beautiful page conforms to certain principles of design. The printer who

knows these principles — the laws governing harmony of shape, balance, and tone — can better control any given situation than one who has not this knowledge.

A knowledge of rules, however, can never take the place of good taste and of a feeling for the right arrangement. Since both are essential, the pupil must study many examples of fine printing. Printing was invented at a time when all craftsmen worked for beauty, and, while much of the early work was crude, it had in it genuine art. Although not much early work is within our reach, some city and university libraries contain a few originals, and it is possible to secure facsimiles of others. There are also many printers of to-day whose work attains high artistic excellence.

Artistic printing depends, first, on a high order of typography; secondly, on the arrangement of the type mass in conformity to the structural lines of the paper; and thirdly, on the correct placement of the block of type upon the page.

Good typography means, first of all, legibility. The legibility of the page is affected by (*a*) the size and shape of the type and the character of its line, (*b*) the spacing between the words and the distance between the lines of type, (*c*) the color of the ink and the quality of the presswork, and (*d*) the shade and finish of the paper—the factors

which determine the tone of the page. These are also the factors which help to make the page interesting or uninteresting; for, while legibility is the chief consideration, the simple beauty of the printed page is not of minor importance.

The student of printing must apply to his work in the printing class the principles of design learned in the art class. When undertaking a piece of printing, he should begin by making a plan for it. He must choose a style of type that will harmonize with the subject. He must decide upon the proportions of his type mass with relation to the space to be filled, and select a size of type consistent with that space. He must then make a pencil sketch upon a sheet of paper of the proper size. This sketch, called in printing offices a **layout,** should specify the exact size and style of type, the size of the type mass and its location on the paper, the place of the cut, if any is to be used, and all other details necessary to show how the work will appear when completed. The making of the layout is important. The best commercial shops find it quite worth while to employ a professional typographic designer who does this work for the compositors and pressmen.

In the making of a design, care must be exercised to have the mass of type conform to the shape and proportion of the paper. For example, a square mass printed on an oblong-shaped paper is

not pleasing. If the length of the paper is to be greater than the width, the type must be so set

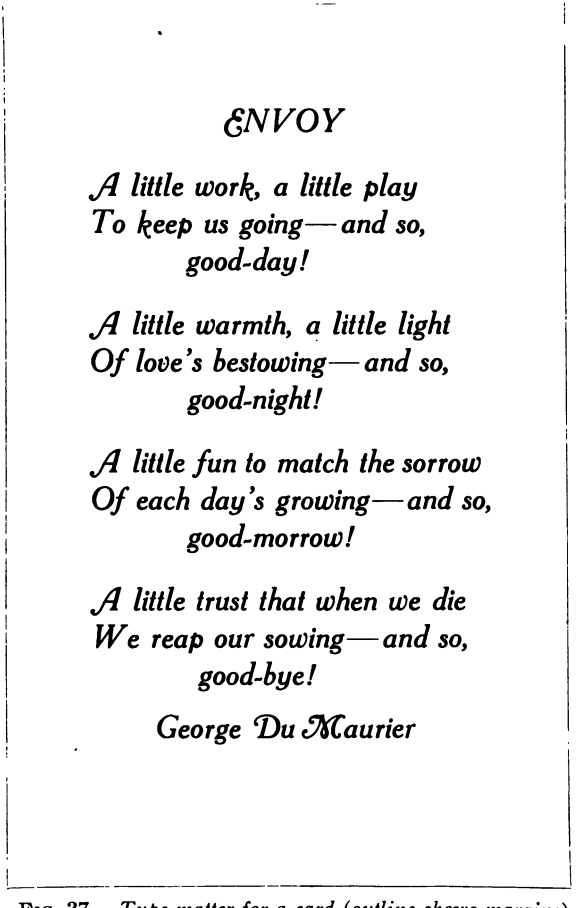


FIG. 37. *Type matter for a card (outline shows margins)*

that the type mass is greater in its vertical than in its horizontal direction, and vice versa. As a rule the appearance is more pleasing when the mass is decidedly vertical or decidedly horizontal. There should be enough difference to lend distinction.

The space surrounding the block of type must be correctly proportioned if the page is to be satisfactory. In a finely designed page this margin must be of sufficient width to serve as a frame. So treated it helps to unify the block of printing within, and leads the eye at once to the consideration of the block itself. If the printed matter is on a card or a single sheet, not to be bound in a book, the usual rule is to make the top and the side margins equal, or nearly equal, and the bottom margin wider. (See Fig. 37.)

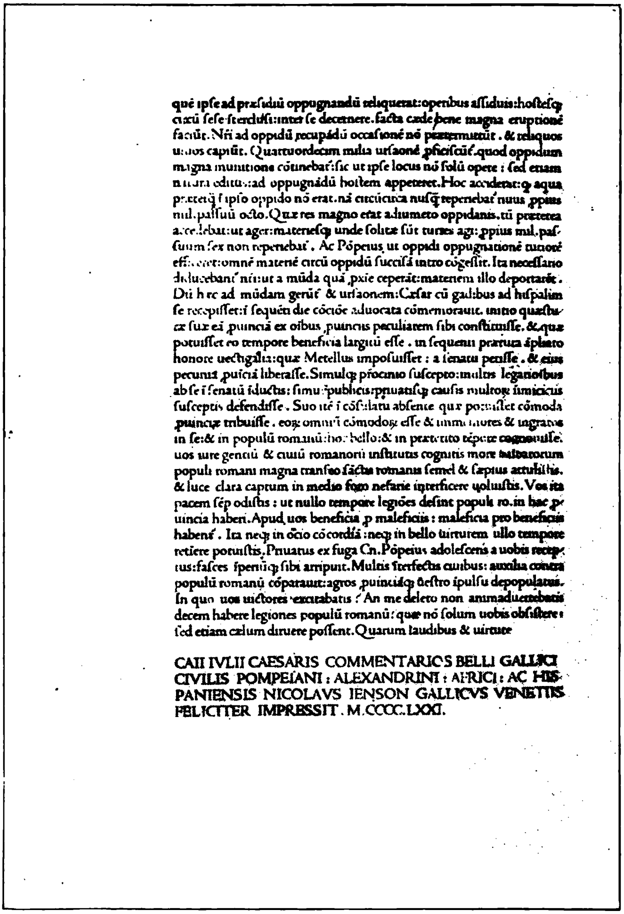
In the case of a book the two open pages form the unified block and the same general rule is observed. (See Fig. 38.) Some otherwise good printers make the mistake of regarding the single page as the unit of the book and place the type mass in the middle of the page. As a result of this practice the binding edge appears wider than the fore edge, and the top margin wider than the bottom one.

From the time books took their present form, about the fourth century, until the sixteenth century, the book page was placed in a dignified

position which young printers may safely adopt. As may be seen from the illustrations, these makers of books left the least margin on the bind-

FIG. 38. *To show open page as a unit. From Aldine Press, 1522*

ing edge, increased the width at the top, made the width of the side margins still greater, and gave the tail the widest margin of all (Figs. 38, 39). It is said that this was done because the book is handled at the sides and the bottom and marginal space was given for this purpose. Another reason may be that the eye naturally focuses on



quē ipse ad præsidiū oppugnandū reliquerat: operibus assiduis: hostesq̃
circū sese sterclusī: inter se decernere. facta cæde ꝑbene magna eruptionē
faciūt. Nři ad oppidū recupādū occasionē nō prætermittūt. & reliquos
uiuos capiūt. Quattuordecim milia ursaonē ꝓficiscūť. quod oppidum
magna munitione cōtinebať: sic ut ipse locus nō solū opere: sed etiam
natura editus: ad oppugnādū hostem appeteret. Hoc accedebat: q aqua
præterq̃ i ipso oppido nō erat. nā circūcirca nusq̃ repeniebať nuius ꝓpius
mil. passuū octo. Quæ res magno erat adiumeto oppidanis. tū præterea
accedebat: ut ager: materiesq̃ unde solitæ sūt turres agi: ꝓpius mil. pas-
suum sex non repeniebať. Ac Pōpeius ut oppidi oppugnationē tutiorē
efficeret: omnē materiē circū oppidū succisā intro cōgessit. Ita necessario
deducebanť nři: ut a mūda quā ꝓxie ceperāt: materiem illo deportarēt.
Dū hæc ad mūdam gerūť & ursaonem: Cæsar cū gadibus ad hispalim
se recepisset: i sequēti die cōciōe aduocata cōmemorauit. initio quæstu-
ræ suæ eā ꝓuinciā ex oībus ꝓuinciis peculiarem sibi constituisse. & quæ
potuisset eo tempore beneficia largitū esse. in sequenti prætura āpliato
honore uectigalia: quæ Metellus imposuisset: a senatu petisse. & eius
pecuniæ ꝓuinciā liberasse. Simulq̃ patrocinio suscepto: multis legationibus
ab se i senatū īductis: simul publicis: priuatisq̃ causis multorū inimicitiis
susceptis defendisse. Suo itē i cōsulatu absente quæ potuisset cōmoda
ꝓuinciæ tribuisse. eorū omniū i cōmodorū esse & immemores & ingratos
in se: & in populū romanū: hoc bello: & in præterito tēpore cognouisse.
uos iure gentiū & ciuiū romanorū institutis cognitis more barbarorum
populi romani magna transeo sāctis romanis semel & sæpius attulistis.
& luce clara captum in medio foro nefarie interficere uoluistis. Vos ita
pacem sēp odistis: ut nullo tempore legiōes desint populi ro. in hac ꝓ-
uincia haberi. Apud uos beneficia ꝓ maleficiis: maleficia pro beneficiis
habenť. Ita neq̃ in ocio cōcordiā: neq̃ in bello uirtutem ullo tempore
retiere potuistis. Priuatus ex fuga Cn. Pōpeius adolescens a uobis recep-
tus: fasces īperiūq̃ sibi arripuit. Multis īterfectis ciuibus: auxilia contra
populū romanū cōparauit: agros ꝓuinciāq̃ uestro īpulsu depopulatus.
In quo uos uictores excitabatis? An me deleto non animaduertebatis
decem habere legiones populū romanū: quæ nō solum uobis obsistere:
sed etiam cælum diruere possent. Quarum laudibus & uirtute

CAII IVLII CAESARIS COMMENTARIOS BELLI GALLICI
CIVILIS POMPEIANI: ALEXANDRINI: AFRICI: AC HIS-
PANIENSIS NICOLAVS IENSON GALLICVS VENETIIS
FELICITER IMPRESSIT. M.CCCC.LXXI.

Courtesy of the Newberry Library

FIG. 39 *Printed at Venice by Nicolas Jenson*

the middle of the page and the space below is consequently foreshortened.

The ink used in printing should be adapted to the paper. There is a great difference in the character of even the black inks. A sample of paper and the color of ink desired sent to the ink-maker will bring ink of the proper tone and consistency and reduce many ordinary pressroom troubles.

In selecting paper one should take into account the skill of the pressman, the kind of work to be done, and the style of type to be used. The color, opacity, quality, and strength should all be considered. A paper with little or no sizing absorbs the ink readily and enables the inexperienced pressman to do satisfactory work. The presence of cuts, whether line or halftone, necessarily affects the choice of paper. Heavy type works well on coarse, rough-textured stock. Fine hair-line type prints to better advantage on wove calendered paper. In general, the paper should harmonize with the subject under treatment. Obviously the quality and style used for an evanescent announcement would differ, perhaps greatly, from that selected for a dignified, permanent record.

To sum up: Paginal beauty depends upon a text composed in well-designed type, of proper measure, evenly spaced, well arranged with correct margins, and printed in good ink with a clear and

even impression of the type upon a suitable quality and color of paper.

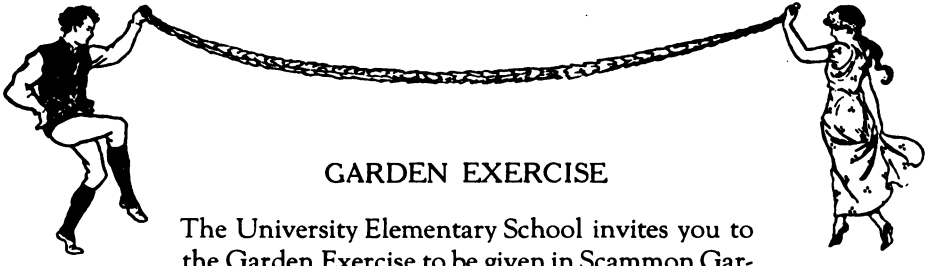
But what of ornamentation, initial letters (Fig. 40), illustrations, borders, head- and tail-pieces? The page may very properly be decorated, but the decoration must be such as to emphasize the printing; it must be consistent with the general design of the type and in no way attract attention

WE believe that God hath made of one blood all nations of men, and that we are His children, brothers and sisters all. We are citizens of the United States, and believe our Flag stands for self-sacrifice for the good of all the people. We want to be true citizens of this our city, and therefore will show our love for her by our works.

Chicago does not ask us to die for her welfare; she asks us to live for her good, so to live and so to act that her government may be pure, her officers honest, and every home within her boundaries be a place fit to grow the best kind of men and women to rule over her.

Mary McDowell

FIG. 40. *To show the use of an initial letter*



GARDEN EXERCISE

The University Elementary School invites you to the Garden Exercise to be given in Scammon Gardens, Wednesday, June the fifth, at eleven o'clock. In case of inclement weather the exercises will be postponed to the following day at the same hour.

FIG. 41. *To show use of decoration to symbolize context (original printed in colors).*

from the print to itself. Above all, the decoration must mean something. The picture must illustrate the subject of the text (Fig. 41). The initial letter, the border, the head- and tail-pieces should symbolize the context (Fig. 42). As the architectural decorator must follow structural lines in themselves ornamental, the book illustrator should be governed in his design by the form of the type page. The type itself also establishes a scale and line character of its own, and the illustrator must, perforce, choose a line which will range best with the type line. He must then proportion the white of his drawing so as to render the text distinctive. The artist and the printer must unite—in one person, as in days of old, or in unity of purpose in these days of specialization—to form a homogeneous design, the page.

The average printer seems to find a squared-up initial easier to handle than a large letter of the page type, although the latter is always in better taste than a stock design "of no particular significance." The correct setting of an initial is not altogether a simple matter. It should always align with the type line at the bottom as well as at the top. The shoulder can be removed when necessary to bring the bottom into line with the type. The space about the initial should be uniformly white, the shoulder determining the amount of indention required. Some letters,

Ad diuum Alfonſum Aragonum & utriuſq; Sicilię regem in libros ciuiliū bellorū ex Appiano Alexandrino in latinū traductos Prefatio incipit feliciſſime.

Arthorū regem ut ab Anneo accepimus ſine munere ſalutare nemo poteſt. Ego uero glorioſiſſime rex cum tuam uirtutē humanitatē q̄ cōſidero tum ęteras naturę dotes: quibus inter ętatis noſtrę principes uel in primis illuſtris es: ſublime ingenium: ſummā caritatē: ſummā continentiā nulla ratione adduci poſſum ut non pluris apud te fidem meā eſſe exiſtimem q̄ ullas opes. Quippe cū te indigentibus & ueluti e naufragio emerſis q̄q̄ ignotis offerre uideam pias manus. Cętera nec ſine munere ad te uenit nec uacuis (ut aiunt) manibus tuā maieſtatē ſum adoraturus. Nam cū priores Appiani libros Libycum: Syrium: Parthicū & Mithridaticū. Nicolao quinto ſūmo pontifici dum i humanis ageret e greco tranſtuliſſem. Reliquos ciuilium bellorum cōmentarios: quę Senatus: populuſq; romanus inuicem geſſit mundū editos aut perfectos a me ad quem potius mitterem q̄ ad te iuſtiſſime princeps Hiſpanię pariter & Italię noſtrę decus: & qui non minus optimarum artium ſtudijs: & litteris q̄ armis inclytus es: atq; memorandus. Accipies igit̄ nouū opus: nec indignū regio animo: regioq; cōſpectu tuo. Sed quod cum priſcis illis uoluminibus ab his: qui hiſtorias ſcripſere poſteritati traditis: facile confetri queat. Q. ſi in contrarium nō nulli refragentur (ut ęmulorum mos eſt) quem uelint ex latinis in medium adducant: ſiue Criſpū: ſiue Cęſarem: ſiue Curtium: ſiue alia inulgata doctorū nomina: eorū: qui hiſtorias ſcripſerunt nullos ex his: qui cum ciuilibus Appiani libris conferri

Anneus Seneca de rege parthorum.

Nicolaus papa quintus.

Libycum.

Syrium.

Parthicum.

Mithridaticum.

Criſpum.

Cęſar.

Curtium.

a a

Courtesy of the Newberry Library

FIG. 42. *A Ratdolt Border*

such as *A* when beginning a word, should always be mortised, while the appearance of letters like *T* and *Y* is improved by indenting the text lines below the initial so that they align with the bottom of the initial rather than with the top (Fig. 43). This makes the initial project somewhat to the left and causes the appearance of an alignment of the initial with the text.

THAT thing which I understand by real art is the expression by man of his pleasure in labor. I do not believe he can be happy in his labor without expressing that happiness; and especially is this so when he is at work at anything in which he specially excels.

WILLIAM MORRIS

FIG. 43. *To show the use of "T" as an initial letter*

What has been said about the sort of line and the relation of black and white properly applies also to borders. The width of the border should be proportioned to the width of the page margins, increasing from the binding side to the tail (Fig. 44).

The best examples of borders also show a similar treatment, on a very small scale, of the white space

Courtesy of the Newberry Library

FIG. 44. *A William Morris border*

which should appear between the border and the type mass.

Whatever applies to other forms of page decoration applies with equal force to head- and tail-pieces. They should agree in design, the tail-piece indicating its purpose both by its shape and by its position.

In conclusion: Embellishment of the printed page is legitimate and with restraint may be effectively used; but the ideal of every young printer should be that of the Doves Press:

> To communicate to the imagination without loss by the way the thought or image intended to be conveyed by the author,—to attempt its solution rather by the arrangement of the book as a whole, with due regard to its parts and emphasis of its divisions, than by the splendor of ornament, intermittent page after page.

Nicolas Jenson was a Frenchman who from 1460 to 1480 published books in Venice. In common with all early printers, he made his own type, using gothic and the newly invented Roman and Greek characters. He designed a beautiful roman type, clear and regular, which in 1889 served as a model for the Golden Type of William Morris.

Erhard Ratdolt was also an early Venetian printer, 1476–1485. He was among the first printers to print flowered borders and initials from woodcuts instead of the rubricated initials produced by hand. His work is remarkable for the beauty both of its illustrations and of its type.

The Aldine Press, best known of the early presses, was founded at Venice in 1494 by Manutius Aldus. Aldus was a scholar as well as a printer, and he printed many Greek

books. He also designed italic type, imitating in this the handwriting of Petrarch. His descendants carried on the work after his death. The Aldine books bear the sign of the dolphin and anchor.

William Morris, an English artist and craftsman who believed that all art should be used for the benefit of humanity, founded the Kelmscott Press in London. Influenced by his study of early typography, he designed three styles of type which he used in his work. His books were lavishly decorated with initial letters and borders in keeping with the type.

The excellence of his work affected printing in both England and America. Better styles of type came into use, and many other private printing houses with high ideals were established. Among these was the Doves Press of Cobden-Sanderson, also in London.

The books printed by the Doves Press are devoid of ornament, but the simplicity of design and the perfection of execution make them even more attractive to many readers than are the Kelmscott books.

CHAPTER XIII

HOW TO MAKE ILLUSTRATIONS

Any boy or girl skilled in handicraft can design and make simple illustrations for his own printing. In drawing the design the principles of art emphasized in chapter xii should be carefully observed. But it is always to be borne in mind that illustrations which are to be reproduced by the children themselves in form for printing should contain no attempt at gradation of tone—outline work and mass drawing only are possible. Head- and tail-pieces, silhouettes, and any simple drawing which tells a story in a few lines can be easily managed and make charming additions to any book.

Two methods of reproduction, the zinc etching and the woodcut, are open to the young illustrator. The woodcut is a ruder form of expression, but is none the less effective. Its purpose is not to express light and shade, but form. As a medium of illustration, wood lends itself well to broad lines and masses; hence, the pupil is advised to begin with wood engraving. (See Figs. 45, 46.)

Commercial engravers generally use boxwood, which, owing to the grain of the wood, cuts easily

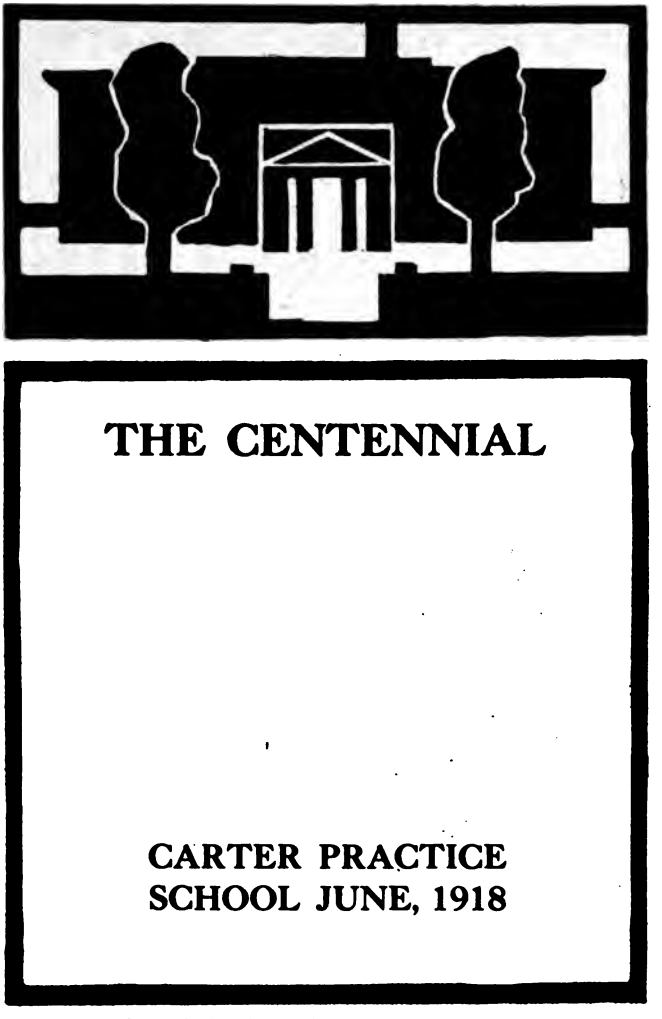


FIG. 45. *Cover design for "The Centennial" cut in wood by the pupils of the Carter Practice School, Chicago*

FIG. 46. *Woodcut made by the pupils of the Herzl School, Chicago*

and evenly and is therefore the best wood for engraving. But boxwood is imported, it is difficult to secure, and it is expensive. Art illustrators sometimes draw on pear, apple, or other hard woods, especially if the printing is to be done directly from the woodcut. Pine cuts well, but is soft and can be used only when the cut is to be electrotyped. Many amateurs select birch, maple, or black walnut, all of which can be used. Red gum has also proved fairly satisfactory for the purpose. The board should first be carefully planed to a uniform thickness of 0.918 inch (type-high), and then sawed into pieces of suitable size.

The design may be drawn on paper and transferred to the wood, but, if the pupil is reasonably skillful, it is more direct to draw at once upon the wood. If the picture has a right and a left side, the drawing must be done in reverse. This, however, is not a difficult thing to do, for by the use of tracing paper, which will show the design on both sides, and carbon paper, the drawing can be traced in reverse on the wood. Pupils can make their own carbon by rubbing the back of a piece of paper with a crayon pencil. Sometimes the artist photographs his picture on the wood. For this purpose the wood is covered with a sensitized wash and a print made on it in the same manner that blueprints are made.

Few tools are needed. The earliest engravers, indeed, worked only with a knife. Engravers' tools cost from thirty-five cents to one dollar each and can be purchased at a jeweler's establishment. Usually from two to six tools are enough. All lines of the drawing should be carefully cut around with a knife or a small veining tool. Then with a chisel or gouge the background should be cut out deep enough not to print. The result shows the design in relief; from this the print is made.

Young pupils who cannot readily cut in wood may obtain similar results with less effort by using a piece of battleship linoleum mounted on wood, the whole to be type-high. It cuts easily and prints very well, although, of course, the grain of the wood is lacking (Fig. 47).

The woodcut may be locked in the form with type and printed on the school press. Commercial shops do not ordinarily print directly from the woodcut, but, as in pages of type for book-work, an electroplate is made. This is necessary because the action of the large presses in printing the immense editions usually required would batter down the wood.

In the making of an etching (Figs. 48, 49) the design is placed upon the zinc plate, which is usually about one-sixteenth of an inch in thickness. With a water-color brush all parts of the design which are to be left in relief should be carefully

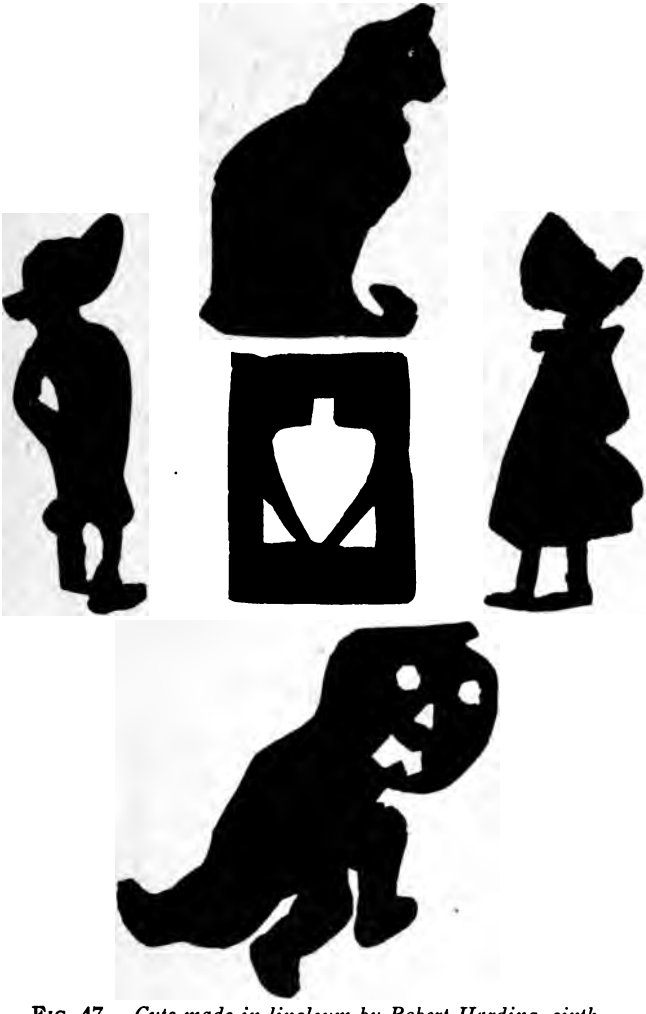


FIG. 47. *Cuts made in linoleum by Robert Harding, sixth grade, University Elementary School, Chicago*

FIG. 48. *Zinc-etching made by elementary-school pupils of the Bloomington, Illinois, Public School*

painted over with asphalt varnish to resist the action of the acid. The back of the metal should also be covered with a wash of varnish. The varnish should be applied with great care, no air holes should be left, and the varnish line should be slightly broader than the line of the drawing.

When it is perfectly dry the plate should be immersed in the acid bath. This consists of a solution (10 to 20 per cent) of nitric acid in a glass or porcelain tray. The plate should remain in the bath until the acid has eaten down the parts not covered by the varnish. This will require from five to twenty-four hours, depending upon the strength of the solution. The plate need not remain in the bath continuously. It should be taken out at intervals and examined. It may require an additional wash of varnish. It may be advisable to make a fresh solution of nitric acid. Shaking the tray will hasten the etching. When the plate is etched deeply enough—that is, when the ridges stand up enough for printing—it should be taken out of the bath and the varnish removed. The plate may be heated to soften the varnish, and then soaked in turpentine or kerosene. The varnish can then be rubbed off with a soft cloth.

The plate should be mounted on a block of wood by means of small nails. The cut when mounted must be exactly type-high.

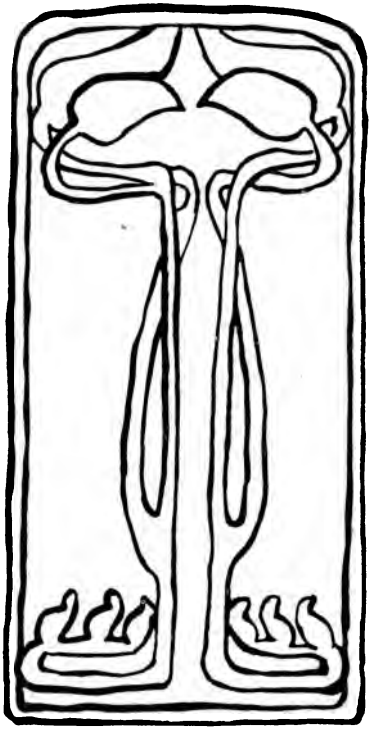


FIG. 49. *Zinc etching made by elementary-school pupils of the Bloomington, Illinois, Public School*

CHAPTER XIV

PAPER

While all paper is made according to the same general plan, various blendings of the materials and modifications of the machinery used enable the manufacturers to produce many kinds of paper suited to different purposes. Some knowledge of the different ways of finishing paper, of the qualities that adapt it to a particular use, of the size and weight of the sheet or web in which it is formed, and of how to order it from the dealer, is to the printer indispensable.

The school printshop will make some use of print paper, book paper, writing paper, cover paper, and cardboard.

Print paper is a cheap paper made largely from mechanical wood pulp. It is used for printing newspapers, cheap magazines, mail-order catalogs, and directories. It usually comes in rolls of different widths, the weight varying from 100 to 1,000 pounds. It is also cut into sheets.

Book paper, because the work is to be lasting, is of greater importance to the printer than other kinds of paper. Antique paper is used for

high-class book work. It is uncalendered—that is, not pressed by heated rolls—and has consequently a rough surface. It requires more ink to make an impression on a rough surface than on a smooth one; therefore a large size of type which does not easily fill up with ink is better than small type for printing on antique paper. It is not well adapted to illustrations, except possibly very coarse zinc etchings. Fine halftones, unless they are deeply engraved and printed by the offset process, cannot be printed on its rough surface. For that reason books printed on antique paper have their halftones printed on enameled paper and inserted.

Machine-finish paper is that which has been passed over the calender rolls in the paper machine in order to smooth and make even the surface. A slight calendering gives a medium finish. After leaving the paper machine, some paper is extra- or super-calendered, that is, run through a stack of calenders, which consists of rolls made of steel, cotton, or granite, placed one above another. The different finishes depend largely upon the particular roll it is run over and the number of times it passes through the calenders. English-finish papers are finished on cotton rolls, not steel. Machine-finish book paper offers a good surface for small type and for photo-engravings and electros. It is used for printing magazines, high-class catalogs, and school books.

Enameled or coated paper is obtained by applying a veneer of clay, glue, and sizing to the surface of machine-finish paper. This is usually done when the paper is in the web in a coating factory. The paper is run through a box containing the coating material, and brushes passing over the paper distribute the coating evenly over its surface. It is then dried by being passed over steam pipes, and from these it passes to the calendering machine which gives it the gloss. Dull-finish coated papers are calendered with felt rolls. The process of coating results in a smooth, fine surface which is desirable for reproducing the finest halftone engravings or color plates.

A variety of paper comes under the headings of writing paper—flat writing paper, bond paper, and ledger paper. Writing paper should be smooth and hard (but not glazed) for bearing ink. High-grade writing paper is used for fancy stationery and documents of importance; bond paper is used mostly for commercial letterheads, envelopes, blanks, and other business stationery. Ledger papers are strong in texture and are made up into account books and ledgers which must withstand the wear of constant use.

The fibers of which cover papers are made must be very strong, for strength and toughness are essential to cover papers, which are used to protect the inside sheets. Coloring matter for these is

usually put into the pulp. Cover papers are thicker than book paper. Sometimes they are made so in the pulp; sometimes two sheets are put together in the web. Cover paper is sold by the pound, or sometimes by the ream (500 sheets), and may be obtained in any quantity.

Bond papers and cover papers are finished by an entirely different process from that used in finishing book papers. They are first made on the machine in the antique finish, then cut to the desired size, and finished by means of cloth placed between the sheets of paper, and pressure. Linen or cotton cloth which has the finish desired in the paper is used, each sheet of paper being covered by a sheet of cloth. These sheets are made into a pile (called a book) and then placed in a pressing machine and pressed. The design of the cloth is thus impressed upon the paper.

Cardboard is of different thicknesses. It is sometimes made to the required thickness when run on the machine, sometimes made of layers of paper pasted together, as indicated by the names two-ply, three-ply, and so on. Pasted cardboard can be detected from the other kind by holding a lighted match to one corner and noting whether the layers separate. If they do, the cardboard is pasted. Cardboard is given a smooth finish on both sides. It is used for business cards and other purposes where a stiff board is required.

It is made in many grades and colors and is usually priced by the hundred sheets.

In the manufacture of paper a vegetable size is mixed with the pulp in the beater. For book paper and cheap writing paper this is sufficient. Good grades of writing paper are further sized and thus rendered impervious to ink by passing the web of paper, after the paper has been formed, into a vat of hot animal size—that is, a size made from the horns and hoofs of animals. Blotting paper is altogether unsized.

Paper may be laid or wove. Laid paper is water-marked paper with heavy lines running with the grain and light lines running across. Wove paper is made with fine lines running in both directions.

Where possible, paper that is to be used folded should be folded with the grain, as it folds more easily, looks better, and does not crack so readily as when folded across the grain. The grain—that is, direction of the fiber—may be determined by tearing, as the tear with the fiber is straighter and more easily made than that across the grain.

Book paper comes from the mill in sheets. It is made in a web and then cut into sheets. It is usually priced by the pound and on the basis of ream lots (500 sheets). If less than a full package is ordered, the price is more proportionally than when the full package is taken.

The usual sizes and weights are:

Size	Weight (Pounds to the Ream)				
24×36	36	45	55	64	37
25×38	40	50	60	70	80
28×42	50	62	74	86	99
32×44	60	74	89	104	119

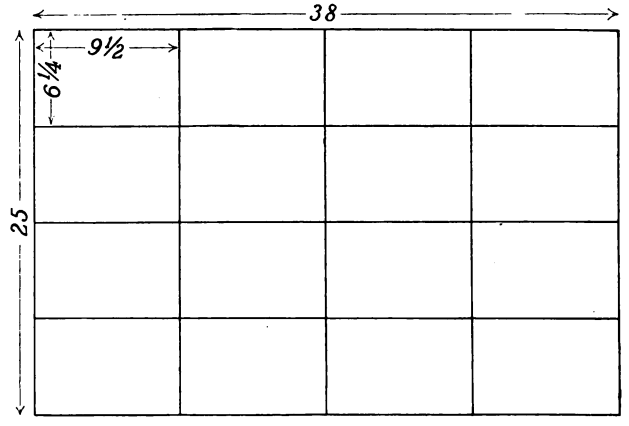


FIG. 50. *Showing how to cut a 25×38 sheet of stock into 6¼×9½ inch pieces without waste*

The various sizes enable one to cut stock with a minimum of waste. For instance, if paper 6¼×9½ is to be used, 25×38 will cut exactly sixteen pieces without waste (Fig. 50).

$$\frac{25\times38}{6\frac{1}{4}\times9\frac{1}{2}}$$

$$4\times4=16$$

The paper is to be 5×7. The stock measures 24×36.

24×36
5×7
4×5=20, with strips of waste 4×36 and 1×20.

If cut the other way,

24×36
7×5
3×7=21, with strips of waste 3×36 and 1×21.

This is the better way to cut this sheet.

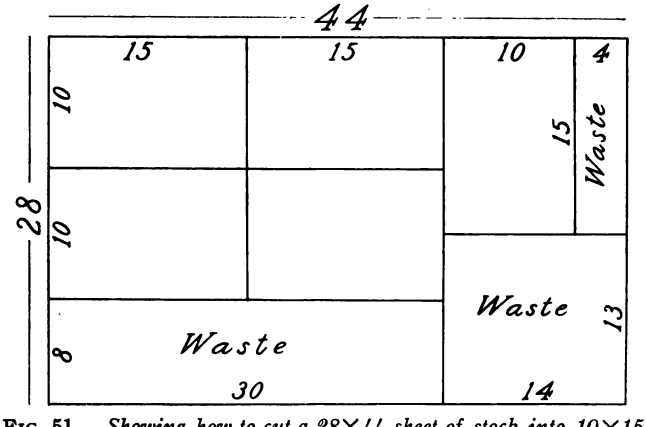


FIG. 51. *Showing how to cut a 28×44 sheet of stock into 10×15 inch pieces (less economical way than that shown in Fig. 52)*

The sheet is 28×44. The paper is to be cut 10×15. The diagrams (Figs. 51, 52) illustrate the method of cutting the paper to get the most out of a sheet.

In this case the waste part that is trimmed off should be saved for future use.

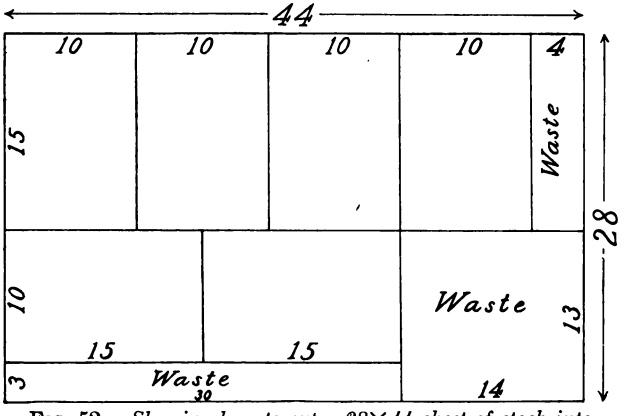


FIG. 52. *Showing how to cut a 28×44 sheet of stock into 10×15 inch pieces with least waste*

If print paper is cut into sheets, the usual size is 24×36—32 pounds to the ream.

It is sometimes necessary to know the equivalent weight of one size of paper in a larger or smaller size. For instance:

The stock is 25×38—40 pounds. I wish to use size 32×44. What weight shall I order?

38×25—40.
38×25=950 square inches.
32×44=1,408 square inches.
1,408×40=56,320.
56,320÷950=59+.
Use 60 pounds weight.
Or stated proportionally: 25×38 : 32×44 :: 40 : 60.

CHAPTER XV

SUGGESTIONS TO YOUNG PRINTERS

The first sections of this chapter are made up of suggestions for avoiding common, everyday errors. It would not be possible to include all such mistakes in one list; hence those which occur most frequently are given here. Each pupil is advised to keep a notebook for suggestions, hints, and "Don'ts," and from time to time to add to this list such other mistakes as come to notice.

The composing-room and press suggestions are more or less a summing up of earlier chapters, but their importance justifies their repetition here in this form. They should be read and re-read until the pupil is so familiar with them that he will automatically follow them.

English

1. *Its* is the possessive adjective. *It's* is the contraction for *it is.*

2. *Further* means *moreover. Farther* means *at a greater distance.*

3. *Their* is the possessive adjective. *There* is an adverb meaning *in that place,* or it is an

introductory word; for example, *There were giants in those days.*

4. A pronoun never requires the possessive sign: *his, hers, theirs, yours, ours.*

5. Make two words of *all right.*

6. Do not confuse *already* with *all ready;* nor *altogether* with *all together.*

7. *Then* and *than* are different words.

Punctuation

1. A contraction is not an abbreviation and does not require a period. The apostrophe is sufficient:

weren't hasn't m'f'g plant
Ours isn't the same as yours.

2. The period and the comma are always placed *inside* the quotation marks (see page 86):

"A stitch in time saves nine."

3. The comma is always placed *outside* the parenthesis if the context requires its use:

The majority of cannas, however, are grown from pieces of the roots (rhizomes), each piece having a bud.

4. The period is placed on the *outside* of a parenthesis except when the thought within the parenthesis is complete and independent:

The plant is cucurbitaceous (allied to melons and gourds).

The composing rule has already been described. (See page 34.)

The Composing Room

1. Examine your composing stick occasionally, as it may work loose when you are using it.

2. Keep your case in order. A mixed case indicates a poor workman.

3. If you drop a piece of type on the floor, pick it up at once.

4. Return leads to their proper place. Do not leave them at the case or on the stone.

5. Be careful of all material. A good workman takes good care of his tools.

6. Labor-saving wood furniture must not be wet. It will shrink.

7. When correcting a line which requires respacing, do it in the stick and not on the galley.

8. Do not distribute **pi** from your hand. Set it up in the stick.

9. Do not use too much ink in taking proofs. Try to secure a gray proof.

10. Do not lay the proof-planer down on the stone. It collects dirt in that position.

11. Have your eye on the particular piece of type that you wish to pick up and pick it up with the nick toward you, if possible, so that you need not turn it in your hand before setting it in the stick.

12. Keep your mouth closed and your mind on your work if you would avoid errors.

13. Letter spacing is very unworkmanlike and should not be resorted to except in very narrow measure.

14. When it is necessary to increase the spacing in a line, do so after the kerned letters, as *f*, *j*, then after the ascending letters, as *b*, *h*, *l*, then after the descending letters, as *g*, *y*, and after any punctuation marks except the comma.

15. Never thin-space (space less than a 5-em) a line or em-quad it.

16. Short words require the same sized space before them as after them.

17. Use two commas with the nicks *down* to begin any quote marks; use two apostrophes for ending quote marks.

18. Set B.C. and A.D., A.M. and P.M., in small caps without space between them.

19. The hyphen, the en dash, and the em dash are not interchangeable. The hyphen is used only in compound words and to indicate the division of a syllable at the end of a line. The en dash is seldom used except to connect two dates; for example, 1914–1915. The em dash is sometimes used in parenthetical expressions, to connect the end of the text with the name of the author, and it may be used to mark a sudden change in a thought or statement. Many writers use it instead of other punctuation marks.

20. Do not let the last line of a paragraph consist of a single short word or syllable. Do not begin a page with the last line of a paragraph.

21. Do not let more than two consecutive lines end with punctuation or hyphens.

22. Set up columns of figures with the decimal points in a vertical line.

23. One line drawn under a word or words in the copy means, Set it in italics; two lines under a word or words mean, Set it in small capitals; three lines mean, Set it in capitals. A wavy line means, Set it in boldface.

24. Read copy a few words ahead. This enables you to grasp the meaning and thus avoid mistakes.

The Press

1. See that the press is well oiled before starting.

2. Note the position of the grippers before taking an impression.

3. Place the sheets of paper lightly against the feed gauges. Never touch the printing when removing the paper.

4. In feeding, handle the stock with care. Be sure your hands are clean. Grasp the paper lightly. Do not draw your thumb and finger across the paper. Do not wet your finger with your tongue. Use glycerin if your fingers are too dry.

5. Never place your hands or feet against any part of the press while it is in motion.

6. Always stop the press before leaving it, even if you are only going to cross the room. A cut or quoin falling out would probably break the press.

7. Keep the ink covered; keep the ink knife clean.

8. Be very careful in handling ink not to smear it on the outside of the tube or can.

9. Do not leave the rollers resting on the disk or on the type.

10. Do not leave the rollers dry at night. Apply a few drops of oil.

11. Waste paper should be placed in a waste basket, not allowed to accumulate on the floor.

12. Waste used in washing up the press should be kept in a covered metal receptacle. Being saturated with benzine, it is easily inflammable.

13. Do not talk while you are running the press. Keep your attention on your work. It is safer.

APPENDIX FOR TEACHERS

Let no act be done haphazard, nor otherwise than according to the finished rules that govern its kind.

MARCUS AURELIUS

APPENDIX FOR TEACHERS

A. THE VALUE OF PRINTING AS AN EDUCATIONAL SUBJECT

Two views prevail as to the place of printing in education. The advocates of vocational training believe that printing should be taught in industrial classes to such boys as expect to become printers. They hold that the purpose of teaching it is to train a boy in the technic of the trade, to teach him to turn out good printing according to accepted commercial standards, and to fit him to enter the ranks of industry. There are other educators who believe that printing is a means to general education; that it is a manual-training subject based upon the same general principles that underlie all the manual arts, and as such it should be taught to all pupils.

It is upon this latter conception of its purpose that the work in the School of Education is based. The idea is broad enough in scope to include many of the basic demands of vocational training. The pupil who learns printing must gain control of his tools. He must learn what can and what cannot be done with printshop material. He must measure his own work by accepted printing standards. In everything but speed, which should not figure largely in a school

printshop, the work furnishes the training desired by the master printer. Furthermore, if the pupil has established correct habits of doing his work, if he has been so trained that he has nothing to unlearn in the shop, the lack of speed may be readily overcome. Moreover, the general course, since it is fuller and broader, may prove to be a valuable asset to the boy who when he has completed his school work chooses printing for his life's occupation.

At some point or other printing touches every study and every force in the school. Though it is not dependent upon the other subjects in the curriculum for its intellectual content, it does make practical demands upon the English, the history, the science, the mathematics, and the art of the school, and in return it reinforces and vitalizes these subjects.

Something of history should enter into a course in printing, for the pupil will have a greater appreciation of the industry if he has, for instance, knowledge of early methods of bookmaking, if he knows the effect upon the world of the invention and development of printing. These facts are more significant if taught in connection with printing than when learned simply as historical facts apart from the shopwork. They cause the pupil to think, and lead to such questions as: Since China used movable type and invented paper, why did she not develop the art of printing? Why for twenty years after Coster and Gutenberg did the art remain stationary?

The manufacture of the various materials used by the printer (the industrial history of the present) is

also full of meaning and interest. Those processes arouse many questions which can be answered only by some knowledge of science. What is cellulose? What causes the odor that arises when paper is made from wood? Why are antimony and tin mixed with the lead in making type metal?

The answers not only help the child to understand the process he is studying, but are sometimes of further value in teaching him why the article in question—type, for instance—requires careful handling. A series of readings on the history of printing and on allied subjects should form part of the course. The order of their arrangement in the course should be determined partly by the relation of the topic to the other work of the child, and partly by the difficulty of the process described.

Perhaps no subject asks more of art than does printing, for into every printing problem comes an art problem. The choice of type, the spacing, the shape of the type mass, the shape and size of the paper, the margins, the decoration of the page, the initial letter, all are points to be considered in every bit of work done in the shop. The principles of art are taught by the art teacher in the art class. These same principles as applied to printing are emphasized in the printshop when the pupil feels the necessity of knowing them in order to apply them. The close relation that exists between art and printing, and the advantage of receiving the art from another and different source, give to the child an added power in the application of these principles.

In the same manner printing demands a knowledge of the fundamentals of English. The pupil realizes that he cannot print without that knowledge. He is driven to the dictionary to learn how to divide a word, or to his manual for some forgotten or never learned rule of punctuation. This searching for what he wishes to know in order to make direct application of it helps the pupil to remember the general rule as well as its specific application. To illustrate: A pupil may place a period after a title. When asked why, he has no particular reason—merely thinks it is customary. Then he is questioned as to the rules for the use of the period. He may recite them glibly or he may refer to his manual. He finds (*a*) a period is used to mark the end of a declarative or an imperative sentence; (*b*) a period is used to indicate an abbreviation. Clearly the period after the title falls under neither of these rules, nor does the special note in his manual account for it. Therefore the period does not belong there. He is further instructed in the practice of to-day by an examination of standard books. In all his written and oral work the pupil has been trained in the correct use of English forms, but the training in the printshop is more effective because failure to know the form and apply the rule results in much unnecessary work, which the pupil must do in order to attain a result which he himself desires to attain. In time the pupil forms the habit of using the dictionary; it comes to be a real friend; he spells correctly; his use of the mechanics of English becomes automatic. He is quick to recognize and correct errors in copy.

The mathematical problems are for the most part those of measuring, but as they require accuracy they are important. The guide pins must be placed exactly, or the page is crooked. Spacing cannot be reduced to a mathematical basis, as is attempted in some schools, for the aim is spacing that appears even, and other factors enter into the problem. But the pupils are aided in learning the relative sizes of spaces and the combinations that may be made with them by a drill in fractions, using the spaces as the basis for such drill. In the elementary school the commercial side of the work should be kept in the background, but in the high school the pupil who buys paper or cardboard for his work is interested in planning the number of pieces he can cut from a given sized sheet, and in figuring for himself its cost.

Printing as construction work makes as strong an appeal to girls as it does to boys. This is partly because it demands deft fingers rather than special manual skill and partly because of its artistic nature. The work tends to develop the child's ingenuity, because the medium is not flexible. At the same time mistakes can be corrected, so that discouragement does not follow failure. It makes for habits of order, carefulness, honesty, directness of purpose, and other virtues. It develops initiative in the child and satisfies his natural desire to do creative work. Withal, it gives a regard for books, an appreciation of their artistic worth as well as of their intellectual content.

Printing is an incentive to social service, for it is in its very nature a social occupation. One never

prints for the sake of printing—there is always need of the output, a product which is rarely if ever made for the printer himself. It is done for the home, or the school, or the larger life outside the school. To print from this motive, to perform an act of social usefulness, reacts upon the pupil. If he is producing something he knows is really needed in the community, he comes to feel himself a necessary part of the community. It thus becomes his community, valuable to him for what he has put into it. He takes a pride in making it good, and in being himself a good citizen thereof. Oftentimes by this means an indifferent, lawless lad is led to recognize his social responsibilities.

The printing problems are great enough to engage the attention and the efforts of the entire school. Coöperation on a piece of work results necessarily in unity. In the printing of a book for some special purpose, or a school calendar, or any similar project, the other departments of the school bring in their contributions to assist in the work. The art teacher helps in drawing the illustrations which later may be worked out in a zinc etching under the direction of the science department, or cut out in wood with the aid of the woodworking teacher. The history, the geography, and the literature furnish suggestions as to content; the library and the museum offer knowledge. The result is a product of the school. Its effect is to bring the workers sympathetically together; not to make prominent the work of any individual or department, but to use what each child and each department can bring to the whole.

B. SELECTING EQUIPMENT

Since the school printshop differs from the commercial print shop in its aims and purposes, it should differ in its plan of work and in its equipment. The shop equipment should accordingly be selected with a view to the teaching of printing. Too often is the school shop fitted out as a commercial shop; too seldom is it recognized that printing has become an educational factor in the school. Even in vocational or continuation work, which must conform more or less to commercial conditions, some concessions must be made to the teaching aspects of the subject. Much more essential is the adaptation of equipment and method to this end in school work with young children. This, however, does not debar the selection of a practical equipment.

The number of pupils in the class, the number of hours a week which each pupil works, and the age, ability, and previous training of the pupils are all to be considered when one is deciding upon the quantity and the size of type and the variety of faces to be purchased. More type will be needed when pupils work in groups on alternating days than when the same number of pupils work in one group on consecutive days, since in the latter case there is less necessity for standing type. A child should use only large type for his major work until such time as his smaller muscles, which make all the delicate adjustments, shall have developed. Steady work with small type tends to injure the eyes and to be harmful to the nervous system. The custom which now prevails in

many schools of giving 10-point as body type is to be deprecated. For general work elementary-school pupils will find 14-point more satisfactory in the first composition.

There is much to be said in favor of pupils doing their early work with few type faces. The cases are more easily kept in order, which is an important consideration when different classes use the same cases. Also, when the child is working with few rather than many type faces, he learns the possibilities and the limitations of printing materials, his power to think develops better, and his taste improves more rapidly. Certainly more artistic results are secured by requiring the pupil to choose his type within narrow limits. Good work does not require a variety of type faces, popular opinion to the contrary. Some of the most pleasing designs in the shops of today are worked out with but one series of type. William Morris himself used but three. Of course, as the pupil advances in knowledge and skill, and as his work becomes more refined, other type faces may be added to the original equipment, but any type selected should be free from hair lines. Text letters are not recommended for general use, as they are confusing even to experienced printers.

The character of the work which should be done by printing classes should be determined by the grade of pupils, by their ages, and by their previous training. The selection should not be influenced by the kind of work done in the commercial printshops, nor by the financial needs of the school. For pupils to solicit

work which properly belongs to the neighborhood printer in order to earn money for the school is, to say the least, unwise. The reduction in prices, possible because no account is taken of overhead expenses, and because the value of the pupils' time is not ordinarily reckoned in dollars and cents, works a hardship to the printing trade and also brings about opposition to the school printshop from that very source which should bring to this work efficient aid and coöperation. The work chosen should be adapted to the worker. It should be a job that interests him, that presents itself to him as a problem, but it should not be of such difficulty that it demands the teacher's attention at every step of the process. The point cannot be overemphasized that in public schools the work must be chosen and the equipment selected with a view to the fact that printing is a class exercise and classes are likely to be large. These considerations naturally bar out some types of printing needed in the school; but no one expects the manual-training classes to do all the carpentry of a school, and there should be the same frank recognition of the limitations of the printshop. The equipment should be selected with a view to such work as the pupils can do with profit to themselves. Furthermore, all work should be barred which does not have a distinct social value recognizable by the pupil who does the work.

It is almost a truism to say that the equipment must accord with the amount of money available. Yet with a small amount of money there is still a choice to be exercised. If a full initial equipment is

not possible, it is advisable to start with properly selected essentials, which can be added to later as the use of the shop increases and as the teacher sees the need. Aside from the question of money, it is a good rule to buy what is needed only when it is needed. This habit acts as a check to the tendency to fill up the shop with non-usable material.

The following list is suggested as a workable equipment for an ordinary school printshop:

An 8×12 New Series Chandler & Price Job Press complete with throw-off treadle, 3 chases, a set of cast rollers, a set of extra stocks, and a wrench

Roman type, either 12-point or 14-point (according to the grade of pupils), in 20-pound fonts, one font for every two pupils in the group

5-pound quads and spaces for each 20-pound font of type

One font each, roman and italic, of the series selected, in the following sizes: 6-point, 8-point, 10-point, 12-point, 14-point, 18-point, 24-point

Quads and spaces for each of the above sizes

A 5-pound font of 2-point rule (light face), 2-point rule (full face), and 6-point rule (1-point face, beveled on side). These may be used to form plain borders

Buckeye composing sticks (one for each pupil in the the group)

One galley for each pupil, 6¼×24

One galley rack

One brayer

One hickory mallet, 2½×4½

One proof-planer

One imposing stone

Case stands

California job cases, two for each 20-pound font of type

Three one-quarter size rule cases
A paper cutter
One Eureka lead and slug case
100 pounds 2-point leads cut labor-saving from 4 to 25 ems
50 pounds 6-point slugs cut same
20 pounds labor-saving metal furniture
One case wooden furniture
10 yards assorted reglet
A planer
An oil can
One dozen challenge Hempel quoins, No. 1
A quoin key, No. 1
One safety benzine can
1 pound black ink
Three cans concentrated lye
A lye brush with handle
A benzine brush
10 pounds waste
One dozen pica rulers
A metal safety waste box
Paper for press, cut to size of press:

1. Manila paper
2. Cardboard
3. Print paper

The first and greatest expenditure will be for the press. The one suggested is durable and does not easily get out of order. It can be bought in various sizes, but an 8×12 chase can be handled by elementary-school pupils and is at the same time large enough for most high-school jobs. A small hand press, which will do good work, costs much less, but there are limitations to the work that can be done on it. A rebuilt press can be bought at a reduction, but is not advised unless

that is the only condition under which printing can be established in the school. Such a press rarely gives satisfaction. It is usually a press out of date; accordingly parts that may be broken cannot be replaced. Since a press is part of the permanent equipment of the school, it should be purchased with the idea of permanency. If, later, additional presses are needed, the job press, of the size and kind suggested, will still be useful, hence will not be discarded (see page 58).

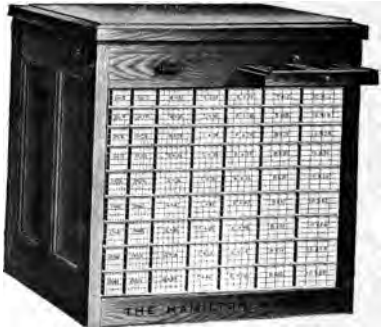
The kind, size, and quantity of type form the next important item. Type is not permanent; it wears down with use and must be frequently replaced. The best printer cannot turn out good work with poor type. It is therefore mistaken economy to buy used type. Whatever else must be bought second-hand, let it not be type. A good roman face should be selected, a face that is not too extended or "fat"—such type as will space easily. Enough should be bought for the entire class. The different sizes of the series chosen will enable the pupils to secure variety without resorting to the use of different and frequently inharmonious faces in the same piece of work. It is essential that each pupil in the class shall have enough type to work with. Idleness breeds disorder, and disorder means slack work. There is a widespread fallacy among school children (perhaps not confined to them) that work with the hands is dissociated from work with the head. Insufficient material fosters this idea. Proper equipment tends to keep each pupil at work in an orderly manner.

Various forms of sticks are on the market. The simplest form is the best to use in school, the size of the stick depending upon the size of the hand that holds it. The two-inch stick is not too large for the smallest child. As many sticks should be provided as there are pupils in the group. Every stick may not be in use all the time, but each pupil should be able to secure a stick whenever he requires one. Patent sticks, that is, those which automatically clamp at em and en measurements, are not recommended, as they tend to make the pupil inaccurate.

An imposing stone (Fig. 53) can be purchased, mounted upon a cabinet containing sort drawers, letter boards, chase racks, furniture, reglet, and tool drawers. It is very convenient, providing places for the many things needed by the stoneman. These cabinets vary in price. They do away with the necessity for buying other pressroom belongings and they prolong the usefulness of many articles by making it possible for them to be taken care of properly. If, however, not much money can be spent for a stone, one mounted on a frame containing one drawer can be bought at a low price; or, if this is too expensive, an unmounted stone, which can be placed on a common deal table, costs even less.

Cabinets or stands to contain cases of type are now made in various styles and at varying prices. One of the best arrangements for a school is found in the American School Printshop compositor's stand and desk (Fig. 54). This is an individual case stand, lower than the stands made for men, with the top arranged

a



b

Courtesy of the American Type Founders Company

FIG. 53. *Imposing stone*

a. Storage side
b. Materials side

to hold a California job case, a galley, a small rule or border case, and a lead and slug case. This places all material at hand for the compositor. The rack below holds ten full-size cases. The stand is also provided with a drawer to contain books, notebooks, or other such material. A galley for unfinished work also finds place in it. A writing board can be put in one of the racks, and thus the pupil can write or draw without leaving his position at the case.

Courtesy of the American Type Founders Company

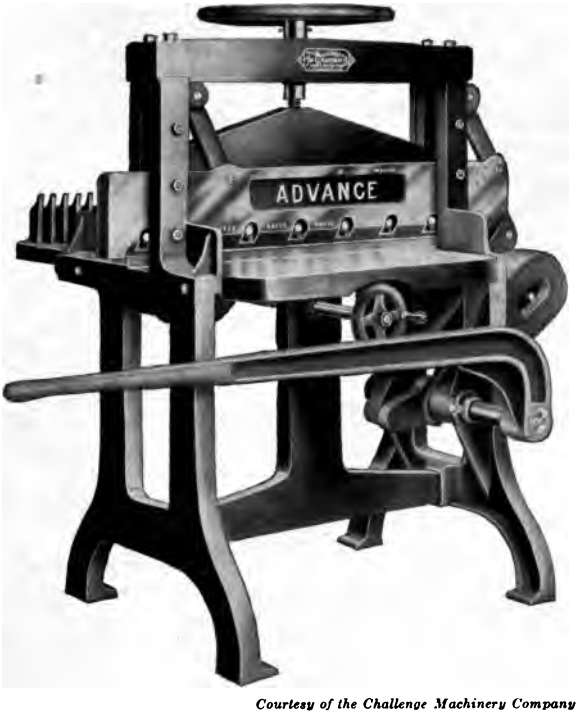
FIG. 54. *American School Printshop compositor's stand*

If the appropriation will not cover such expenditures, cheaper case stands can be purchased. Closed cabinets, containing only cases, can be bought at a reasonable price. They are neat in appearance and keep the type free from dust. If these are used, tables or open-case stands must also be provided to hold the cases when pupils are at work. Double open-case stands are much cheaper than closed cabinets. When they are not in use, the dust can be kept out by covering the type with cardboard covers which may also serve as drying boards. The ordinary case stands are too high for the average pupil. They may be lowered by cutting the legs, or, better still, a number of platforms of different heights, on

Courtesy of the American Type Founders Company

FIG. 55. *Boston staple binder*

which pupils may stand, can be made in the manual-training room. The type may be laid in a combination job case with blank cases for the small caps. Each case should contain 10 pounds of type and 2½ pounds of quads and spaces.



Courtesy of the Challenge Machinery Company

FIG. 56. *Advance paper cutter*

A paper cutter, like the press, is a permanent investment, and none should be purchased that is not adequate for all purposes (Fig. 56). A 23-inch cutter will

answer the purpose of the majority of schools. Until a large-size cutter can be bought, it is better to buy stock cut to the desired size. The cost of cutting is but a trifle. A paper and card cutter can be used to trim cards and paper.

Courtesy of Horace Hacker Company

FIG. 57. *Poco proof-press*

The cost of the equipment will vary according to the place and time at which it is bought and in proportion to the quantity purchased at one time. It is better, on the whole, to select the most reliable house and to make all purchases from one firm. The expense can be materially reduced if the cases, case stands, frames, tables, cabinets, and other wood furnishings can be made in the school manual-training shops.

If the expenditure is not limited, the following articles, which will be found very desirable, should also be purchased:

Motor
Steel chases
Boston staple binder on pedestal (see Fig. 55, page 148)
Proof-press (Fig. 57)
2-point labor-saving rules
12×2½ composing sticks
Composing rules in case
Copper and brass thin spaces (all sizes)
Brass galleys
Cabinet (for pressroom)
Cabinet for cuts
Stock cabinets (paper and cardboard)
Sample cabinets (paper samples)
Bookcases for printshop literature
Hooks to contain copy (for each group)
Exhibit case (to show class work mounted on cards)
Screen (on which to pin samples of work)
Scrapbook (to hold samples)
Stereopticon, with slides

In some schools each child who takes printing is required to present a written statement signed by the parent absolving the school from responsibility for any accident that may occur. This protects the school, but not the child. A better and wiser way for the school—and this cannot be too strongly emphasized—is to provide the pupil with equipment so safe that he cannot possibly hurt himself. In addition to the constant watchfulness of the teacher, the following

devices should be included in all school printing outfits:

Platen guard for all Chandler & Price presses
Fly-wheel guard
Gear and pinion guard combined
Motor bracket with driving pulley
American job-press brake, cast iron, for all sizes, new or old series

SUGGESTIONS FOR THE PRINTSHOP LIBRARY

Aldis, Harry G. *The Printed Book.*
American Type Founders' Catalogue.
Bouchot, Henri. *The Printed Book.*
Davenport, Cyril. *The Book: Its Development.*
DeVinne, Theodore. *The Invention of Printing* (1878).
———. *Correct Composition.*
———. *Modern Book Composition.*
———. *Plain Printing Types.*
———. *Title Pages.*
Dictionary, Unabridged.
Duff, E. Gordon. *Early Printed Books.*
Graphic Arts.
Gress, Edmund G. *The Art and Practice of Typography.*
Henry, Frank S. *Printing for School and Shop.*
Hitchcock, Frederick H. *Building the Book.*
Inland Printer.
Johnston, Edward. *Writing and Illuminating and Lettering.*
Manual of Style of the University of Chicago Press.
Printing Art.
Roberts, W. *Printers' Marks.*
Smith, Adele Millicent. *Printing and Writing Materials.*
Stewart, A. A. *The Features of a Printed Book.*
———. *School of Printing Leaflets.*
Books of the Typographic Technical Series for Apprentices.
Woolley, Edward. *Handbook of Composition.*

C. THE ARRANGEMENT OF PRINTING ROOMS

Every teacher must decide the arrangement of his shop according to the space allotted for the work, the size of the equipment, and the number in his class. But the ordinary printshop arrangement of alleys is not ideal for a schoolroom. The instruction naturally divides itself into three parts: classroom instruction, work in composition, and presswork. It is most economical to arrange the shop with these in view.

General classroom work consists of drawing (making designs, planning a layout, and similar work), painting (combinations of colors), reading lessons on printshop work, and mathematical computations. These require the use of a blackboard and desks at which the children can draw, write, or read.

The composing room requires space for case stands, galley racks, table for tying up type, copy-hooks on which the class may leave the copy when it is not in use, and wall space in which hooks or brads can be driven for holding the sticks. This room should be well lighted with both natural and artificial light.

In either the classroom or the composing room there should be a bookcase containing a dictionary, a manual of style, Woolley's *Handbook of Composition*, and other reference books. There should be a collection of lantern slides with stereopticon or projection machine and pictures illustrating both the present and the past history of printing and its allied occupations. Space should be provided for a cork wall or a cloth screen on which samples of good work may be placed. A scrapbook to contain specimens of good commercial

printing is extremely useful. A cabinet, in which mounted cards of work can be kept free from dust, and yet which can always be opened to show the cards, should be in every printshop. Complete files of work should always be kept, with extra copies for mounting or to be used as printshop samples.

The pressroom should have abundance of light. It contains the press, the imposing stone, ink cabinets, stock cabinets, paper cutters, and all the things needed for the stone- and pressmen. A large cutter should not be operated by elementary-school pupils.

D. OUTLINE OF COURSE IN PRINTING IN THE ELEMENTARY AND HIGH SCHOOLS OF THE SCHOOL OF EDUCATION OF THE UNIVERSITY OF CHICAGO IN 1916–1917

Elementary instruction begins the last semester of the fifth grade. The pupils are young to take up printing, but their great interest in it and the results attained in the past make the plan worth continuing. The classes meet two hours per week. The work is continued for the same period of time through the sixth and seventh grades and is required of both boys and girls.

Printing is not a required study in the high school, but it may be elected under the same conditions as hold in other shop courses. Pupils choosing this subject work five hours per week.

The shop is adequately equipped with an 8×12 Chandler & Price Gordon job press, a 16-inch paper cutter, sixteen case stands, sufficient Caslon type of all sizes for the regular work of the classes, with enough type of other styles to enable the pupils to do any extra work desired. There are also imposing stones, cabinets, and all the smaller objects usually to be found in printshops. (See Appendix B.)

In all classes excursions and projected pictures are used as sources of information. The excursions may be visits to modern printshops, engraving establishments, paper mills, type foundries, libraries, museums, or any other source of first-hand information upon printing or its allied industries. The slides and pictures convey information which cannot otherwise be

secured. The pupils are encouraged to add to the collections already started of materials used in paper making, type casting, and other industries connected with printing.

Any pupil who has followed the work outlined for the fifth, sixth, and seventh grades should, at the close of the seventh year, be familiar with the history of printing and know what can be done with printing materials. He should know what constitutes good printing. He should be able to design and present in graphic form a plan for printing such simple work as appears in the course and should have sufficient skill to carry out that plan.

Elementary School

fifth grade

The first step is to learn the case, which may occupy the time of three or even four lessons, depending upon the individual pupil. He could commit to memory the lay of the case in less time, but it is better for him to acquire some skill in handling the type and in reading it upside down while he is at the same time memorizing the case. He should be occupied with the type from the very first lesson and will not find learning the case an irksome task. The result of this method shows in the efficiency of his first composition.

Poetry is best for the first work, because poetry presents fewer problems of justification than prose does and is simpler for the child. The order of all the technical work should be determined, first, by the difficulty it presents to the child, and, second, by its

dependence upon some other topic. The fifth-grade pupil cannot work rapidly, and, if given a whole poem to set up, would fail to get it done in time for use. But the attitude of children of this age toward their work makes it possible for a group to combine on one poem. This plan is repeated until a child becomes skillful enough to work alone, when he may set up an entire poem.

Work on poems fills the greater part of the composition time. Late in the course a little prose is introduced, consisting of first-grade reading lessons, which are written in one-sentence paragraphs, or responsive readings of the Psalms, or other work similar in form.

When the work in composition is well under way, about the middle of the course, presswork begins. This is very closely supervised. No fifth-grade pupil is ever permitted to run the press unless the teacher is giving him full attention. This means, then, that the instruction is given to the class, one child after another working the press while the rest of the class observe.

In the topics assigned for fifth-grade reading the printing teacher has the assistance of the grade teacher, who coöperates in every way possible. The work is correlated with the study of medieval history.

The work in art in the fifth, as in the other grades, is done partly by the art teacher and partly by the printing teacher. The art problems suggested grow directly out of the printing work. They are met, in a general way, as follows: If the problem belongs

to the entire class at the same time, it is discussed by the art teacher in the art period. If it is an individual problem, it is taken up by the printing teacher.

OUTLINE

I. LEARNING THE CASE:

a. Exercise in paper folding preparatory to drawing and learning the case
b. Drawing type case to scale
c. Setting up the letters in each box

From this exercise should result:

1. Proper standing position
2. Correct holding of the stick
3. Knowledge of the lay of the case
4. Knowing the type—its parts
5. Ability to read the type upside down
6. Recognition of spaces by sight and by touch
7. Some skill in handling type

II. SETTING TYPE:

The drill secured while learning the case enables the pupil to work with intelligence and with a degree of skill in even his first attempts at composition. The first work is done with 18-point and 14-point type; later 12-point may be used. The work consists of setting up:

a. Poems of short lines
b. Prose consisting of reading lessons for the first grade which occur in one-sentence paragraphs
c. Verse—arranged on a card
d. Spelling list—this grade is preparing a spelling book to consist of words used in its own grade work

Through these exercises the pupil learns:

1. Even spacing between words

2. The filling out of an uncompleted line with quads and spaces
3. Indention—the alignment of riming lines
4. The use of leads
5. The pica as a unit of measurement
6. The point system
7. Method of tying up type and handling type masses
8. Proofreaders' marks; how to mark a proof and correct mistakes in the type

III. FEEDING THE PRESS:

The pupils in this grade handle sheets of paper not larger than $6\frac{1}{4} \times 9\frac{1}{2}$ inches. They also feed cards, using a thimble made of sandpaper. The pupils may observe the processes of locking up and making ready The pupils themselves execute only the following steps:

a. Putting the chase into the press
b. Feeding the single sheets—a steady, direct movement is required
c. Taking out the chase, washing the type, and putting away the furniture and chase

IV. SPECIAL WORK ON THE SCHOOL MAGAZINE:

a. Setting up centered titles and running heads
b. Folding and assembling the printed sheets and sewing the magazines

V. READING:

Articles on the following topics have been prepared by the printing teacher:

a. Early Methods of Keeping Records
b. The Work of the Scribes and Monks
c. Block Books
d. The Story of Gutenberg

e. Laurence Coster
f. Benjamin Franklin as a Printer

VI. ART:

Emphasis laid on the following points:

a. Harmony of shape between the type mass and the paper
b. Placement of the type mass on the page; the width of margins
c. Arrangement of cards, Christmas, Easter, valentine, or birthday
d. Drawings for the school magazine

SIXTH GRADE

The instruction given in this grade is partly oral and partly from printed directions.[1] As new points come up they are explained by the teacher to the class. Later, if any child meets a difficulty, he is given individual help. If, however, the difficulty seems general, the assistance is given to all the class together. As the work improves, printed directions are used. The printed work follows the oral explanation. For instance, in locking up, the teacher first gives a demonstration accompanied by an oral explanation of the process. After that the pupils are expected to lock up their work, following the printed directions.

The time devoted to composition in this grade is about equally divided between setting up prose and poetry.

[1] Pending the completion of this book, printed directions were prepared for the class.

The pupils work enough on the press to acquire skill, printing all their own compositions and doing a part of the presswork for the fifth grade.

As the reading in this grade correlates more directly with science than with history, it is done in coöperation with the science teacher.

The work begun in the fifth grade continues throughout the sixth grade, with the emphasis placed upon the added topics indicated in the following:

OUTLINE

I. COMPOSITION:

The work is done with 12-point type, but there may be occasional use of other sizes if the work demands it.

a. Practice is given in setting:

1. Poetry—such poems as are needed in any department of the school or any a pupil desires to print
2. Prose—one or more paragraphs of any required matter may be set up; this grade composes many simple announcements, such as notices for parents' meetings, invitations, office hours for the administrative officers, and work of similar character

b. Practice is given in taking proofs:

The pupils take proofs of their work after they have corrected all the mistakes they can see in the type. They mark the proof according to accepted proofreaders' marks and make the necessary changes in the type.

II. PRESSWORK:

a. Locking up—this consists of single pages, locked under direction

b. Feeding the press—the sheets may be the full size of the press (8×12)

c. Removing the chase and cleaning the type preparatory to distributing

d. Cleaning and oiling the press—this is done only under the teacher's direction

III. DISTRIBUTION OF TYPE:

The distribution begins in this grade, taking up one line at a time. When the pupil has become skillful he handles more than one line.

IV. SPECIAL WORK ON THE SCHOOL MAGAZINE:

a. Setting table of contents

b. Assisting with the presswork

c. Folding and sewing

V. READING:

Articles prepared by the teacher for reading in this grade consist of:

a. A Medieval Library

b. Foundry-cast Type

c. How Magazine Illustrations Are Made. Photo-Engraving and Wood Engraving

d. Paper Making, Ancient and Modern

VI. ART:

a. Making of a layout for work to be done

b. Designs of simple units for cards or for the school magazine; how the line of the drawing affects the tone harmony of the print

c. Freehand lettering and spacing, single words and notices

d. Visits to collections of medieval manuscripts

e. Study of examples of fine printing, both ancient and modern

f. Collection of pictures which illustrate early methods of making books

SEVENTH GRADE

The seventh grade uses the printed directions. These pupils work quite independently, requiring very little other instruction.

The composition time is mainly devoted to prose, a class or a group working together upon some work to be arranged in a booklet. This may be a club constitution or industrial, geographical, or historical reading prepared for the use of some grade.

The poetry set up is usually a collection made into a booklet. In some cases the composition is done in the lower grades, the seventh grade making up the forms and printing them.

An average of two lessons a month is spent in reading on the topics indicated in the outlines. Information on similar topics is secured by outside work. The English teacher assigns for theme work such topics as:

The Beginnings of Writing
Cursive and Book Hand
Early Illuminations
Cuneiform
The Book of Kells
Cadmus
Hittite Writing
The Plantin Museum
William Morris as a Printer
Block Books, etc.

Each pupil prints his own theme and distributes it to the class, thus sharing the knowledge he has acquired.

Instruction in this grade centers upon prose composition and presswork.

OUTLINE

I. COMPOSITION:

The regular work is done with 12-point or 10-point type. Other sizes are used as it becomes necessary.

a. Poetry:

Besides printing any poems needed in the school, this grade prints booklets of original verse.

b. Prose:

Refinement of spacing begins to show in the seventh grade. The prose work is presented through a variety of problems, among them reading lessons for other grades, programs, letterheads, cards requiring the use of horizontal rules, initial letters, original plays, and calendars.

II. PRESSWORK:

There is great advance in the presswork in this grade. The pupils show an interest in the press as a machine. This interest is utilized by the science teacher in the work on mechanics. The pupils print their own compositions and part of the fifth-grade work, carrying on the following processes:

a. Locking up
b. Making ready
c. Feeding
d. Washing type
e. Cleaning the press

III. DISTRIBUTION:

The pupils not only distribute their own dead type, but help in the work of the younger pupils. Printed directions are given them.

IV. WORK ON THE SCHOOL MAGAZINE:

This grade has charge of the editorial and business management of the *School Reporter*, as well as the work in composition. Pupils from other grades assist in the composition, but this class then concludes the work, which consists of:

a. Setting the editorial page
b. Making up pages
c. Taking page proofs and making a "dummy"
d. Presswork

V. READING:

The reading for this grade is prepared as for the previous grades. The special topics are:

a. The Press—Platen and Cylinder
b. Composition of Ink
c. How Rollers Are Made
d. Machine Composition—Linotype and Monotype
e. The Printing of a Modern Newspaper

VI. ART:

a. Making a layout for any job attempted
b. Planning a booklet of original verse or prose
c. Study of title pages
d. Drawing units and cutting them in wood for use on cards or booklets
e. Making zinc plates
f. Setting an initial letter
g. Printing in colors
h. Freehand lettering; space and letter short quotation, using a large initial
i. Arranging a cover design involving the use of a decorative unit
j. Studying harmony of tone; upon what it depends

High School

The high-school pupils electing this subject have heretofore fallen into two classes: those who have previously studied printing in the elementary school and those who are just beginning the work.

The outline which follows is designed for the latter class. The pupils who know something of the subject continue the work done in the grades, but with more independence of thought and action and more refinement of method.

Correct spacing (apparently even) is demanded. The pupils plan work of increasing difficulty. Imposition of more than two pages and some tabular composition have been done. Border work and the use of color in printing are steps in advance.

Much more leeway in the selection of his work is permitted the high-school student than is granted to the pupil in the grades. This is possible because the high-school student himself feels a definite need for printing certain things. His work is largely personal. He wants a copy of his club constitution, he requires tickets and programs for his class entertainments, he wishes cards or notices to advertise some private interest, or he collects his own writings and puts them forth in artistic form. He chooses, within limits, the thing he wishes to print, plans his layout, makes his own decorations, selects the type, the color of ink, and paper of such color and quality as he considers suitable. He confers with the various teachers concerned, getting whatever assistance he requires to do the work he has planned. His standard of result is high because

the work is for himself or his fellows and will come under their judgment.

It is the office of the teacher to pass upon the suitability of the work chosen, its degree of difficulty, its value as a means of increasing the pupil's knowledge and skill in printing. It is the teacher's work to criticise, to suggest improvements, and through the pupil's need and desire to know a particular detail to bring to his knowledge the general principles underlying the work.

OUTLINE

1. The case
   a. Lay of type
   b. Correct posture of body
2. The point system
3. Type families
4. Straight-matter composition:
   a. Spaces, quads, leads, and slugs
   b. Indention, rules for English as applied in the shop
   c. Correction of errors
5. Proofreaders' marks
6. Margins
7. Paging
8. Elementary imposition
9. Tabular composition
10. Borders; ornaments
11. Principles of design as applied to printing
12. Presswork
13. Study of paper
14. Illustrations
15. Use of color in printing

E. WHAT TO PRINT IN THE SCHOOL PRINTSHOP

Two considerations must enter into the choice of what to select for printing: first, the use to be made of the matter printed; next, the difficulty of the process relative to both the skill of the pupil and the limitations of the shop equipment. The printing of a poem is the simplest job for a beginner. Having learned the case, he has in his first poem but to place the three-to-em spaces between the words and fill out the line with quads and spaces. The indention of the riming lines, the leading between the stanzas, and the arrangement of the title are all more or less simple steps in the work.

This may be followed by the setting-up of a prose paragraph, which is more complicated because the process of justification enters into it. It is necessary to spend much time upon this part of the work, as it is the basis of all good printing. When one can space prose well, he has acquired control of his materials and can readily learn all the possible arrangements of type.

Before attempting to print a card such as a Christmas, Easter, or birthday card, or valentine, the pupil should always make a design for it. He should work out in his mind a clear image of type of definite size and style, arranged in a mass of good proportions and placed on paper with correct margins. He should then project this image in a plan (a layout), either a card printed by hand (Fig. 58), or a simple pencil sketch on the card (Fig. 59); or a mass of colored paper

may be cut out and pasted on the card (Fig. 60). With this realized thought in his mind he can set up his

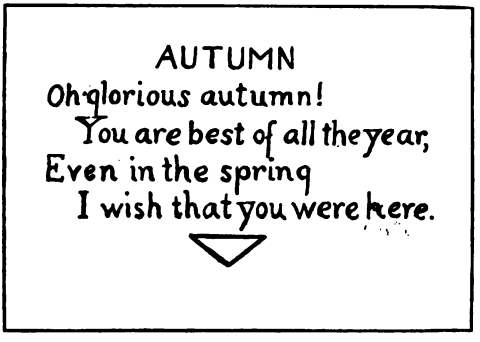


FIG. 58

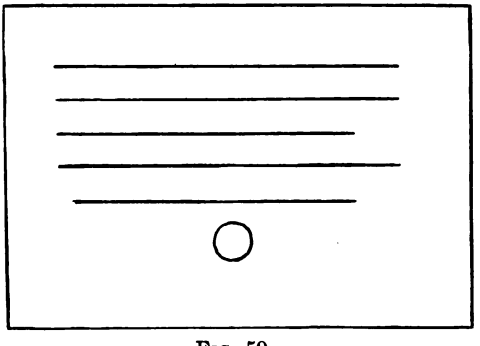


FIG. 59

verse and take a proof. Comparing his proof and his plan, he is able to revise his first arrangement (see Fig. 61, page 170; Figs. 62 and 63, page 171).

If the composition is to be inclosed by a border, the type should be set first, and so set that in both its

vertical and its horizontal direction it measures exactly an integral number of picas or nonpareils. The border will then fit around the type mass.

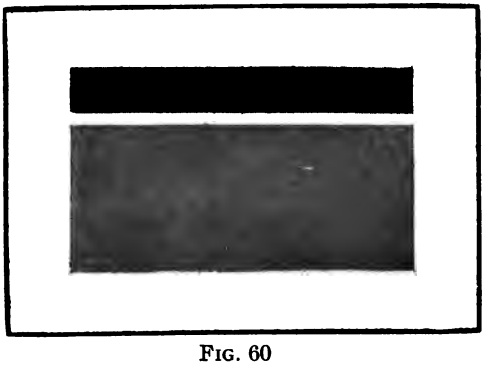


FIG. 60

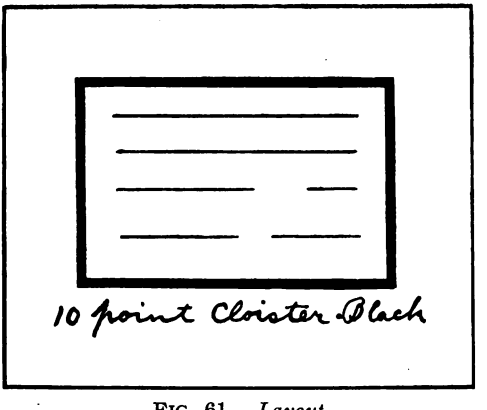


FIG. 61. *Layout*

In the use of an initial letter the directions given in chapter xii (pages 102 f.) should be followed. If the initial is to be printed in a different color from the rest

of the card, the letter should be removed and its place filled by a blank. After the card has been printed,

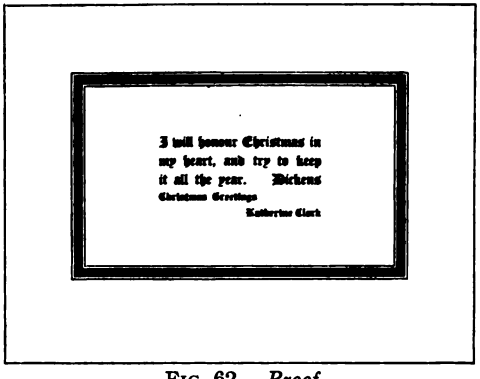


FIG. 62. *Proof*

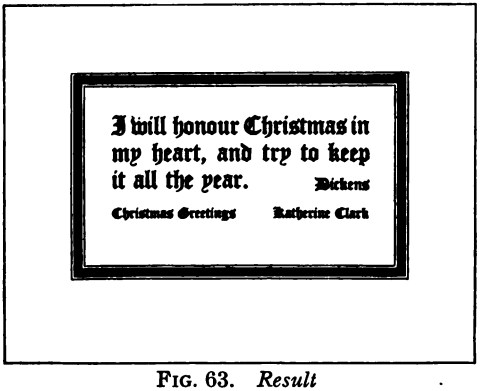


FIG. 63. *Result*

Type used, Cloister Black, 18-point, 12-point, and 10-point sizes. 12-point border. Printed in blue, on a brown card.

the blank should be taken out and the initial letter put into its proper place in the composition. The

dead type should then be taken from the chase, and furniture put into the place it occupied. The press should be carefully washed and inked with the color desired and the cards again run through, feeding to the original guide pins. The pupil should be restricted in the use of colors. An initial in a different color is not satisfactory unless the initial is ornamental. Several colored letters at intervals on a field of black usually result in a spotty appearance.

If it is necessary to print a job containing rules, it is better to set all the vertical lines in one composition and all the horizontal lines in another composition and then lock both so that they will register when the form is printed. The lines then do not appear broken in the print and the rollers are less likely to be cut.

Booklets of original verse or an original play are interesting copy, and the possibility that one's work may be put into print is always an incentive to attempt to write both prose and verse. The length and width of the type page should be decided and a dummy of the booklet made. In the printing of verse, where the measure necessarily varies, each poem should be centered under the running head, the top margin of each page remaining always the same. Two pages should be locked together; for example, 1 and 4, 2 and 3.

The printing of a school paper is a project which more than any other makes for unity in the school. It reacts upon and coördinates the entire curriculum and is in itself a problem great enough to engage the energies of all departments. It not only connects

school life with outside life in a way that children can understand, but sets up standards of accomplishment which must be met.

The pupils should provide the copy and make their own illustrations. If possible, all the work should be their own. If printing classes meet often enough, they can set all the type. In schools whose printing classes do not meet daily, part of the work—setting straight matter—can be done outside, and the pupils can set the titles, signatures, and running heads, make up the pages, and do the presswork, folding, assembling, and sewing. This allows time for other work and does not confine the class to one kind of problem.

The following list is made from the printshop file of an elementary school and may be suggestive:

I. FOR USE IN THE SCHOOL:
Admission tickets
Announcements of all kinds
Calendars
Candy recipes
Club constitutions
Collections of original poems (booklets)
Cooking recipes
Invitations
Labels
Library cards
Menus
Mothers' club announcements, etc.
Outlines of work
Phonic lists
Plays (original)
Poems (for literature classes)

Programs
Reading lessons (for grades)
Report blanks
School paper
Shop cards
Words to songs (for music classes)

II. FOR USE IN THE HOME OR THE COMMUNITY:

Billheads
Business cards
Church services
Illustrations of various kinds
Letterheads
Shopping cards
Social-settlement announcements
Sunday-school programs

III. FOR PERSONAL USE:

Birthday cards
Blotters
Christmas cards
Easter cards
Favorite poems or sentiments
Letterheads
One's own compositions
Valentines

F. SAMPLES OF WORK ACTUALLY DONE IN SCHOOL PRINTSHOPS

On the following pages are shown samples of type matter and illustrations designed and printed by pupils in classes of printing—in large part by elementary-school pupils in the School of Education. These samples have been chosen from work in present and past years. They have been selected from various booklets, collections of poems, club constitutions, plays, and the *School Reporter*.

In some cases the pupils wrote the articles as class work assigned by the English teacher, in others the writing was due to the pupils' own initiative. The type was set up and printed in the printing classes.

The drawings for the illustrations likewise were made some as a class exercise in the art class, some in the printing class, and others are the work of individual pupils. The greater number were drawn under the direction of the art teachers. All the drawings here represented were reproduced in zinc plates by the commercial engraver. The grammar-grade pupils did the printing, but the drawings represent the work of all grades.

The Elementary School magazine, the *School Reporter* from which so many of the illustrations are taken, is the work of the pupils from the first to the seventh grade inclusive. It has been entirely self-supporting in the thirteen years of its existence, carrying always a bank balance large enough to provide for a year's expense. It is published quarterly at a subscription price of fifty-cents a year (the only income), and averages from twenty to twenty-eight pages a number.

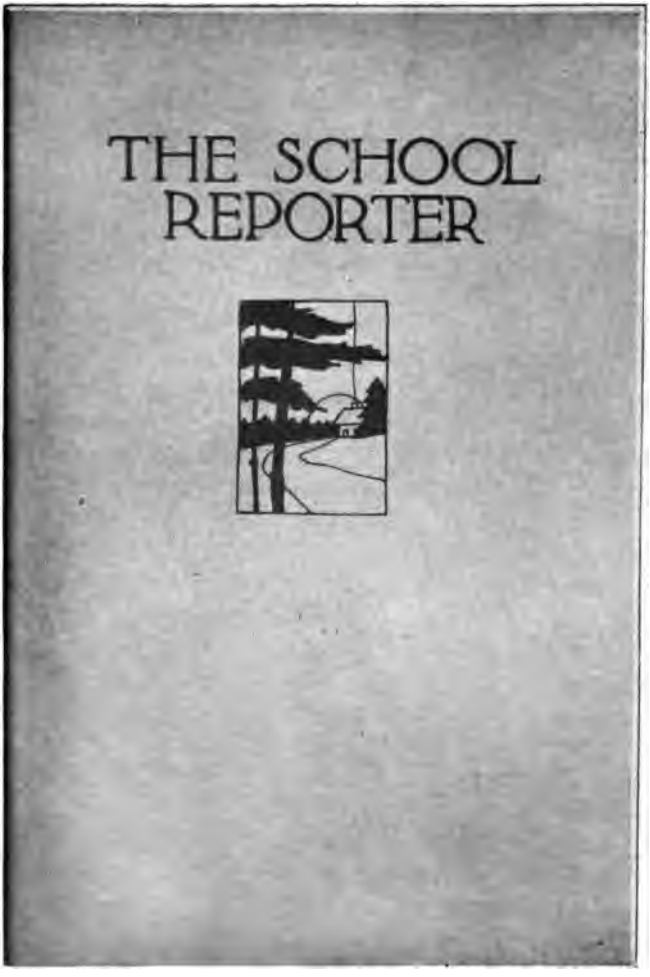
The Principal and the Faculty of the University Elementary School invite you to three readings from Wagner's "Ring" to be given by Mr. Bertram Griffith Nelson of the Department of Public Speaking, assisted with incidental music by Miss Hazel B. Smith, in Leon Mandel Hall, on the evenings of February fourth, tenth, and nineteenth, at eight o'clock.

Type matter for a card (outline shows margin used)

THE SALUTE TO THE FLAG

I pledge allegiance to the American flag, and to the republic for which it stands; one nation, indivisible, with liberty and justice for all.

Type matter for a card (outline shows margins used)



Cover design for the "School Reporter," published by the University Elementary School of the University of Chicago

THE SCHOOL REPORTER

OF THE

UNIVERSITY ELEMENTARY SCHOOL

VOLUME XIII No. 2 1917-8

DEDICATION

To the former students of the Elementary School, now in the service of our country, who, we feel are doing much for us, we take pride in dedicating this Service Number of the SCHOOL REPORTER.

We are proud of this Roll of Honor; because we think perhaps some of the lessons these boys learned in our school are helping them in their efforts both here and "over there." Mingled with our pride is a determination to make ourselves *worth* the sacrifice they are now making for us.

We want to do something, however small, to help in this great struggle. This is the spirit in which we have taken up this Service Work. We are devoting this number to a description of what we have done, not because the total is great, but rather because it is small; for being small it may encourage others to make like attempts.

It is regretted that the following list which contains many of their names cannot at this time be made complete.

THE EDITOR-IN-CHIEF

A page from the "School Reporter"

Constitution and By-Laws

The Girls' Club
of the
University High School

The School of Education Print Shop
1917

ARTICLE 10. Amendments

Amendments to this constitution may be made by handing a written statement of the proposed amendments signed by ten members of the executive board, or by twenty-five members of the club at large, to the secretary or to the president. Said officer shall accordingly bring the matter up at the next board meeting, but it shall not be voted upon until the meeting after the one at which the proposed amendment is read.

BY LAWS

1: The Dean, the president, the secretary, parent members and faculty advisors of the executive board shall not be allowed to vote, except in the case of a tie, when the president shall be allowed to cast the deciding ballot. Said members of the executive board shall not make or second motions, but shall be wholly limited to suggestions.

2: These by-laws may be amended, at any time, by the vote of the majority of the quorum of the executive board.

3: The executive committee shall meet not later than the Thursday before any regular or special meeting of the executive board—the exact time of meeting to be left to the discretion of the committee—for purpose of discussion of all business to be brought up at the next executive board meeting.

A page from pamphlet title page of which is shown on opposite page

Christmas Exercises of the University Elementary School

Friday, December 22 2:00 p.m.
Mandel Hall

God Rest You Merry, Gentlemen

The audience is invited to join
in the singing of this song

God rest you merry, gentlemen,
Let nothing you dismay,
Remember Christ our Savior
Was born on Christmas Day,
To save us all from Evil's power
When we were gone astray;
O, tidings of comfort and joy,
Comfort and joy,
O, tidings of comfort and joy.

From God our Heavenly Father,
A blessed angel came;
And unto certain Shepherds
Brought tidings of the same:
How that in Bethlehem was born
The son of God by name.
O, tidings of comfort and joy,
Comfort and joy,
O, tidings of comfort and joy.

A page from program cover of which is shown on opposite page

THE HONOR OF YOUR PRESENCE IS REQUESTED AT THE

FIFTH COMPETITIVE GYMNASTIC DRILL

BETWEEN THE FRESHMAN AND SOPHOMORE GIRLS

AT THE
UNIVERSITY HIGH SCHOOL GYMNASIUM, FRIDAY, MARCH 7, 1913, 8 P.M.

PROGRAM

1. Freshman Drill and Apparatus Work
2. Sophomore Dancing
3. Games
   a. Dodge Ball
   b. Basket Ball Relay
   c. Newcombe
4. Sophomore Drill and Apparatus Work
5. Freshman Dancing
6. Basket Ball Game, Juniors vs. Seniors

SCORE

	Freshman	Sophomore
March and Run *Possible 10 Points*		
Floor Work *Possible 40 points*		
Apparatus Work *Possible 20 Points*		
Gymnastic Dancing *Possible 20 Points*		
Games *Possible 10 Points*		
Total		

A page from program cover of which is shown on opposite page

FANCIES IN VERSE

WRITTEN AND PRINTED
BY LOUISE REDFIELD
SEVENTH GRADE U. E. S.

THE PRINT SHOP
THE SCHOOL OF EDUCATION
1913

THE RULERS OF DAY AND NIGHT

The sun is the golden ruler
  Of the day so clear and bright,
His throne is the blue, blue heaven,
  His crown is of dewdrops light.

His servants are flashing sunrays,
  His cloud steeds ride through the sky,
But at evening he sinks from his kingdom
  And the moon mounts up on high.

Her robe is of starlight splendor,
  Her sceptre a comet's tail,
Her servants are stars bright and twinkling
  And moonbeams soft and pale.

Her coach drawn by fiery comets
  Is a shimmering mass of light;
There's a glorious battle of rivalry
  'Twixt the rulers of day and night.

A page from booklet title page of which is shown on opposite page

THE WORLD'S EASTER BONNET

The lovely world has a new Easter bonnet,
With daffodils, tulips and crocuses on it;
The streams are blue ribbons to twine it around,
And its straw is the beautiful grassy ground.
The trees are its plumes, so feathery and tall,
And the clouds make a veil to spread over it all.

MARY WARREN

EASTER LILIES

See the Easter lilies!
O, how fair they grow,
Swinging in the breezes
Dancing to and fro.
Tall and white and slender
The lilies stand!

WINSLOW LEAVITT

A page from booklet title page of which is shown on opposite page

ORIGINAL VERSES

BY THE THIRD AND
FOURTH GRADES
OF THE UNIVERSITY
ELEMENTARY SCHOOL

THE PRINT SHOP
THE SCHOOL OF EDUCATION
1913

The Trolls' Christmas

Dramatized and played by the Third Grade in 1909. Printed by the same children in the Seventh Grade in 1913

THE PRINT SHOP
THE SCHOOL OF EDUCATION
1913

SCENE II

In a forest. Darkness all around. Snow on the ground and trees.

Action: *St. Nicholas enters with two children.*

ST. NICHOLAS

Here you are. I must go, for I have other business to do.

Action: *St. Nicholas leaves them. Lottie is crying.*

AXEL

Don't cry, Lottie.

LOTTIE

Axel, where are we? *Wolves are heard howling.* What is that sound?

AXEL

Oh, it's the wolves howling!

LOTTIE

I am so frightened. What shall we do?

AXEL

Let us see if we can find a house.

LOTTIE

Oh, I am so tired.

AXEL

Look, Lottie, I think I see a cave over there in the rocks. Come, let us go and see. It

A page from booklet title page of which is shown on opposite page

FAIRY LYRICS

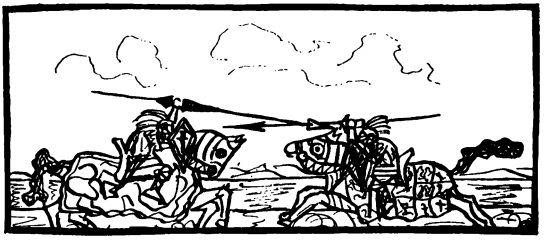
SELECTED AND ILLUSTRATED
BY
THE THIRD GRADE

PRINTED AND BOUND BY THE EIGHTH GRADE
OF
THE ELEMENTARY SCHOOL
OF
THE UNIVERSITY OF CHICAGO
MDCCCCIX

Postal card (colored by hand)

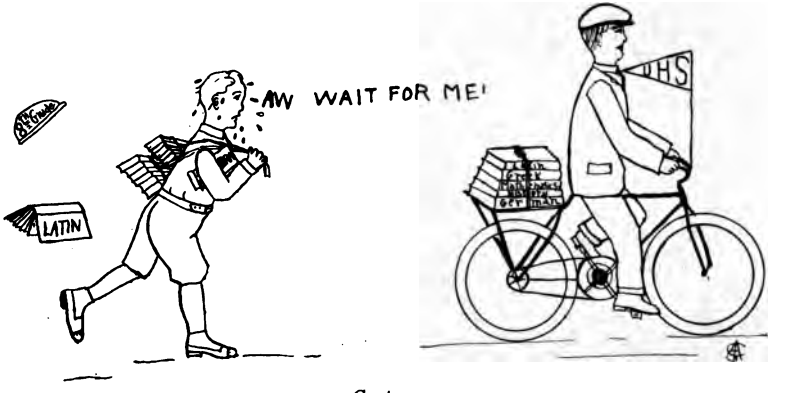
THE DRAWING OF THE SWORD

A COMMUNITY BALLAD WRITTEN BY THE SEVENTH AND EIGHTH GRADES THE UNIVERSITY ELEMENTARY SCHOOL



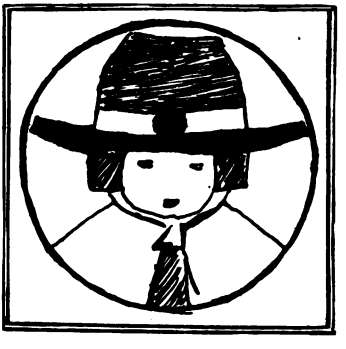
Type used: 24-point and 12-point Tabard

Frontispiece from booklet title page of which is shown on opposite page (both were colored by hand)

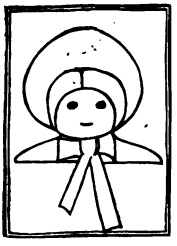


Cartoon

An eighth-grade class was doing a year and a half of work in one year. One boy expressed the struggle in the above cartoon taken from the "School Reporter"



Illustrations for Puritan poems

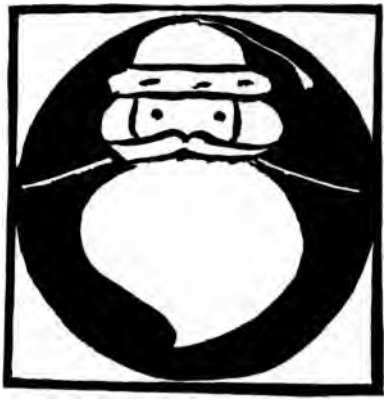


Illustrations for Puritan poems

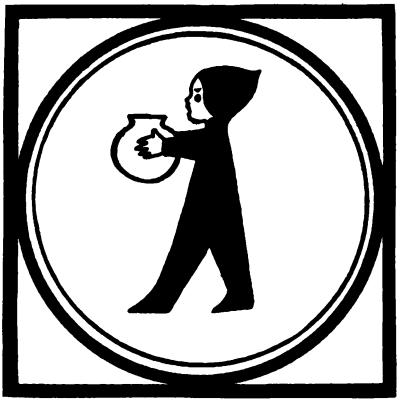
Postal card (colored)

Unit for cover page

Units for cover pages of the "School Reporter"



Units for cover pages of the "School Reporter"



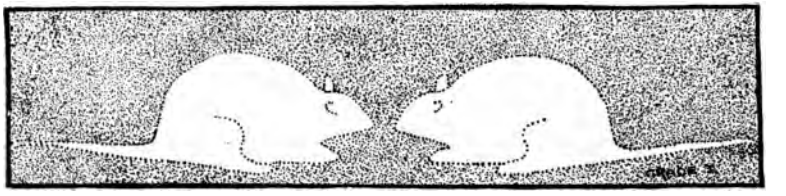
Units for cover pages of the "School Reporter"

Cover design for "Fancies in Verse"
(printed in blue ink on gray Japanese paper)

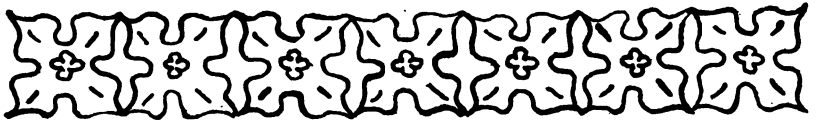
Cover design for the "School Reporter"

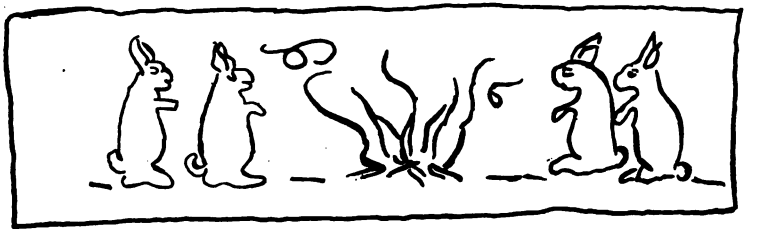
Unit for cover page of March "School Reporter"

Unit for cover page of Girls' Club Constitution



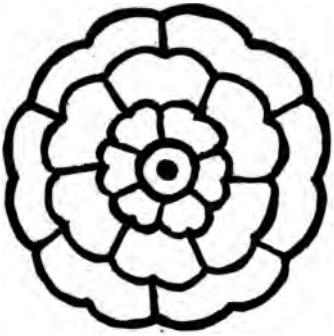
Tail-pieces





Tail-pieces

Initial letters and tail-pieces used in a booklet on "Our Greek Gods and Heroes"



Cover-page unit

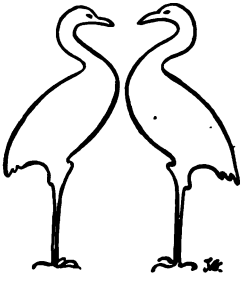
Tail-piece

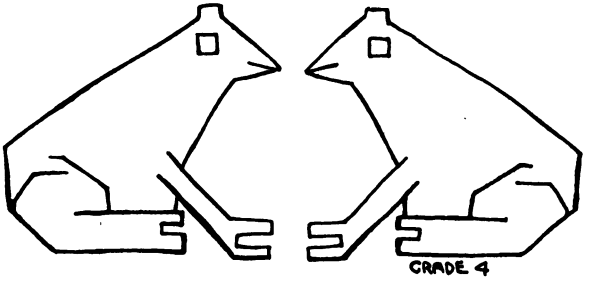
Tail-piece

University Elementary School monograms

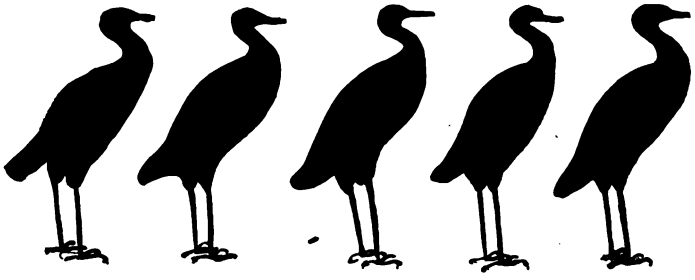
Boys' Club monogram, University High School

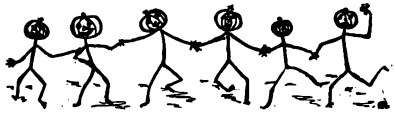
Tail-pieces—University Elementary School

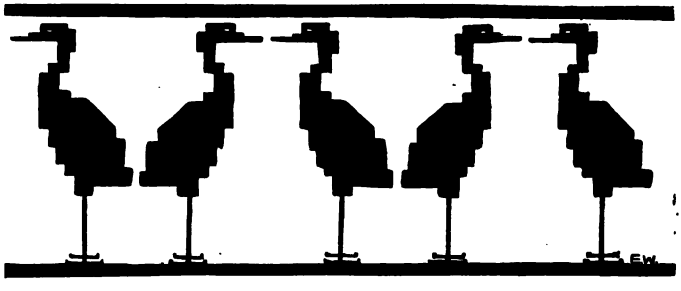




Tail-pieces

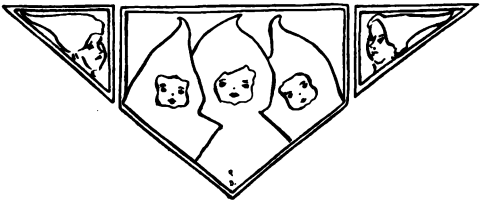






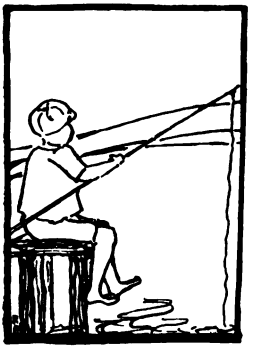
Head- and tail-pieces

Cover design for Christmas poem



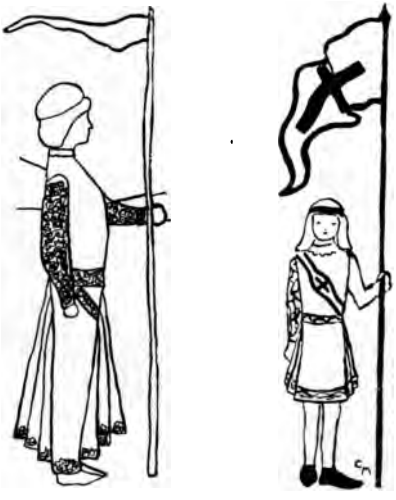
Cover design for Christmas verses

Cover design for "The Trolls' Christmas"



Tail-piece

Tail-piece



Tail-piece and cover design for "The Drawing of the Sword" (colored by hand)

Tail-piece

GLOSSARY

Alignment.—Arrangement in a line. When two or more different sizes of type are justified so that their faces line at the bottom, they are said to align.

Antique finish.—A rough surface on paper.

Arabic numbers.—The ten figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 0. They are supposed to have originated in Arabia.

Ascending letters.—*b*, *d*, *f*, *h*, *l*, *t*, those that ascend to the upper shoulder of the type body.

Backing.—Printing the second page of a leaf.

Bale.—An iron band on the tympan used to hold down the tympan sheets.

Beard.—The slope between the face and the upper surface of the body. *See* Fig. 1, p. 3.

Bearers.—Strips of metal, type-high, placed at the ends of the chase to bear off impressions evenly and to carry rollers evenly over the form.

Black-letter.—*See* **Text.**

Body.—That part of the type between the face and the feet. *See* Fig. 1, p. 3.

Body-mark.—*See* **Stem.**

Bold.—Anything that stands out heavily. Black-face or heavy-face type is called bold.

Brayer.—A small hand roller used to distribute ink; it is used to ink the type in taking hand proofs.

Break-line.—The last line of a paragraph when it contains a blank space.

Calendered.—A term applied to paper that has been smoothed by the calender stacks and thus given a polished surface.

Cap.—The abbreviation for a capital letter.

Case.—A receptacle for type divided into compartments or boxes so that there is a box for each character in a font of type.

Case stand.—A light wooden frame made to support the news case.

Chase.—The iron frame in which the type is locked.

Clean proof.—A proof that is practically free from errors.

Coated paper.—A highly enameled paper, which comes in a glossy or dull finish.

Composing room.—A room where type is set up or composed and made up into forms for printing.

Composing rule.—A metal strip used in composing.

Composing stick.—A shallow metal tray which the compositor holds in his left hand when setting type.

Composition.—The branch of printing which consists of setting up type, correcting it, and making up ready for the press. *See* chap. iv.

Compositor.—A typesetter.

Condensed.—Said of type that is narrow in proportion to its height.

Copy.—The written words or drawings from which the printer works.

Correcting.—Alterations made in type.

Counter.—The depression between the lines of a face. *See* Fig. 1, p. 3.

Cut.—A name used by printers to designate a blocked engraving.

Cut-in.—A note set into the side of a reading margin.

Cylinder press.—A printing press consisting of a flat bed, a cylinder, and an automatic inking device. The type form is locked on the bed, which moves back and forth beneath the rotating cylinder, the sheet being held on the cylinder while the impression is being taken.

Dead.—Type matter that has been printed. When the form has been used, it is *killed*—therefore *dead*, and ready for distribution.

Delete.—Take out.

Descending letters.—Letters that have down strokes; *g* and *y* are descending letters.

Dirty proof.—One that has many errors.

Disk.—The round ink plate on the platen press.

Distribution.—Returning type to the proper cases; used also of spreading ink evenly over the rollers.

Doublet.—A word or words repeated.

Dummy.—Pages put together to show plan of a proposed book or booklet.

Em.—The square of any type body as unit of measurement.

En.—One-half of an em.

Expanded.—Said of type that is wide in proportion to its height.

Face.—That part of the type which appears in

relief on the end of the type and which when inked leaves the impression on the printed surface.

Feeder.—The one who feeds the paper to the printing press.

Feed guides or gauges.—The pins or quads fastened to the tympan which guide the feeder in placing the paper.

Feet.—The end of the metal opposite the face is usually grooved by the machine in casting. This makes two projections called the feet. The term is applied to the end opposite the face even when the groove is omitted.

Folio.—A sheet of paper folded in two leaves.

Font.—An assortment of one size and face of type.

Form.—A page or a number of pages locked in the chase ready for the press.

Foul case.—One in which the type is mixed.

Furniture.—Pieces of wood or metal fitted around the type form to fill in the blank space in a chase.

Galley.—A shallow metal or wooden tray with three perpendicular sides made to hold the type when it is taken from the composing stick.

Galley rack.—A case with open compartments made to hold galleys.

Gothic.—The name given to a type face which is usually square in outline and devoid of serifs. This is a gothic letter: **T.**

Guide pins.—*See* **Feed gauges.**

Grippers.—On a job press the iron bars which take the sheet off the form after the impression has been made.

Hair line.—The fine line connecting the stem or body-marks. *See* Fig. 1, p. 3.

Halftone.—A photo-engraved plate consisting of dots of varying sizes uniformly placed, capable of rendering not only high lights and shadows of a picture, but all the intermediate or half tones.

High-to-paper.—Said of type cast higher than the standard height, 0.918 inch.

Imposing stone.—The stone or iron table upon which a form is locked ready for press.

Imposition.—Arranging the pages or jobs in the chase. *See* chap. vii.

Imprint.—The name or mark which the printer or publisher affixes to his work.

Indention.—A form of spacing used principally to mark the beginning of paragraphs.

Initials.—Large letters used at the beginning of chapters or of main sections of books or jobs of any kind.

Ink.—A combination of pigment, varnish, drier, and other materials.

Italic.—A sloping type face.

Job press.—Any printing press used for printing jobs, not books, etc.

Justification.—The spacing out of lines to proper tightness.

Kern.—That part of the letter which sometimes projects over the side of the body, as in *f* or *j*.

Kill.—To eliminate copy or composed type.

Layout.—A working diagram of a job, showing general grouping of the job and specifying kinds and sizes of type to be used.

Leads.—Strips of metal used between lines of type.

Leaded matter.—Type which has leads between the lines.

Ligatures.—Two or more letters tied together and cast on one body—*ffi*, *fi*, *ffl*, *ff*, *fl*, etc.

Line cuts or line engravings.—A photo-engraving in which the various parts are represented in lines, and not broken up into half tones as in a halftone.

Live matter.—Composed matter not printed.

Locking up.—Tightening the quoins in the chase so as to hold the mass of type in place. *See* chap. vi.

Logotypes.—Two or more words cast on one body; for example, *bought of*, *rec'd of*, etc.

Lower case.—The name applied to the small letters. Also the lower of a pair of type cases.

Low-to-paper.—Said of type that is cast lower than the standard height, 0.918 inch.

Making ready.—Preparing the form on the press for printing—underlaying, overlaying, setting guides, etc.

Making up.—Arranging type into pages, with running heads, etc.

Mallet.—A wooden head with a handle.

Margin.—The space around the printed matter on a page.

Matter.—Composed type.

Measure.—The width the composing stick is set.

Mortise.—To cut out part of the type for the purpose of inserting a letter.

Neck.—*See* **Beard.**

News case.—*See* **Case.**

Nick.—A shallow groove on the front of the body near the feet, for the purpose of guiding the compositor. Type is set with the nicks up.

Off its feet.—Said of type that does not stand squarely on its feet.

Offset.—The rubbing or smutting of a freshly printed sheet.

Offset process.—A method of printing by which the ink is offset on a rubber blanket instead of directly upon the paper.

Out.—One or more words omitted by mistake in composition.

Overlay.—Paper put on the tympan to give more impression to part of the form.

Overrun.—To change the position of composed type by moving backward or forward when correcting.

Page cord.—String used in tying up pages.

Pi.—Mixed type.

Pica.—12-point size of type. The pica em is used as the standard of measurement.

Pin-mark.—A small circle indented in the side of the body near the face to designate the foundry at which the type is cast. *See* Fig. 1, p. 3.

Planer.—A smooth wooden block used to level the type in the form.

Platen.—That part of a job printing press on which the make-ready, tympan, and guides are placed and on which the sheet takes the impression from the type.

Platen press.—One that gives the impression from a flat surface.

Point.—The unit of the American point system.

It is one-twelfth of the pica—0.013837 inch, to be exact—or, for practical purposes, one seventy-second of an inch.

Point system.—The system of casting type bodies in some multiple of a unit called a point.

Printing press.—Any of numerous machines for making printed impressions on paper, board, tin, etc., from an inked surface.

Proof.—A printed impression taken for the purpose of making corrections.

Proof-planer.—A smooth wooden block covered with felt. It is used in taking proofs.

Proof-press.—A press used exclusively for taking proofs.

Quadrats or **quads.**—Metal blanks used to fill out spaces.

Quoins.—Wedges used in pairs to lock up forms.

Quoin key.—A metal device for tightening quoins.

Reglet.—Thin strips of wood, 6 points and 12 points in thickness, used in locking up forms.

Revise.—A second proof, taken after the corrections marked on the first proof have been made.

Roller.—An iron rod covered with composition, used to distribute ink on the type.

Running head.—The title of a book, chapter, or subject placed at the top of each page.

Score.—To crease heavy paper on the press so that it will fold easily.

Serif.—The fine, cross line put in as a finish to unconnected lines in a letter. *See* Fig. 1, p. 3.

Shank.—*See* **Body.**

Shoulder.—The margin between the bottom of a letter and the outer edge of the body. *See* Fig. 1, p. 3.

Single-leaded.—Type having one lead between the lines is said to be single-leaded.

Sizing.—A gelatinous material used in paper making.

Slug.—A lead 6 points or more in thickness.

Small caps.—Capital letters of a smaller size than the regular capitals of a font. They are usually about the same height of face as the lower-case *m*.

Solid.—Type without leads between the lines is said to be solid.

Sorts.—The letters in the boxes of a case.

Spaces.—Pieces of metal about four-fifths of the height of type and of varying thickness. *See* chap. iii.

Stem.—The thick line of the face of the letter. It is sometimes called the body-mark or the thick-stroke. *See* Fig. 1, p. 3.

Stick.—*See* **Composing stick.**

Stoneman.—The man who imposes and locks up the forms.

Tail margin.—The margin at the bottom of the page.

Take.—The part of copy taken at one time by a compositor.

Thick-stroke.—*See* **Stem.**

Turn for sorts.—To place a piece of type face down in place of a letter that is missing.

Tympan.—The covering of the platen or cylinder for printing.

Type gauge.—A wood or metal ruler graduated in picas or in type sizes, used for measuring the width of page or the number of lines in a piece of matter.

Type-high.—The standard height of type, 0.918 inch.

Underlay.—A piece of paper or card placed under the type or cut to increase the impression.

Wide-leaded.—Type having more than one lead between the lines is said to be wide-leaded.

Work-and-turn.—The method of printing a full form on one side of a sheet and then turning it over and printing the same form in the other side.

Wrong font.—Letters of one series mixed with another.

THE INDEX

[Page numbers referring to illustrations are designated by the abbreviation "ill." in parentheses. For definitions, see Glossary, pages 213–222.]